

FIFTEENTH ANNUAL REPORT



ON

INTRODUCTION OF DOMESTIC REINDEER
INTO ALASKA,

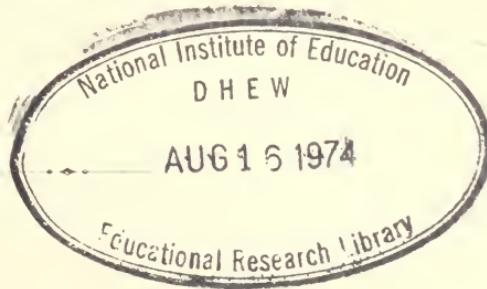
WITH

MAPS AND ILLUSTRATIONS,

BY

SHELDON JACKSON, LL. D.,
GENERAL AGENT OF EDUCATION IN ALASKA.

1905.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
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LETTER OF TRANSMITTAL.

DEPARTMENT OF THE INTERIOR,

Washington, June 20, 1906.

SIR: I am in receipt of Senate resolution of the 14th instant that the Secretary of the Interior be directed to transmit to the Senate the report of Dr. Sheldon Jackson upon the introduction of domestic reindeer into the district of Alaska, for 1905, together with the maps and illustrations.

In response thereto, I have the honor to transmit herewith a copy of the report indicated in the foregoing resolution, together with its accompanying maps and illustrations.

Very respectfully,

E. A. HITCHCOCK,

Secretary.

The PRESIDENT OF THE UNITED STATES SENATE.

DEPARTMENT OF THE INTERIOR,

BUREAU OF EDUCATION,

Washington, D. C., June 16, 1906.

SIR: I have the honor to acknowledge, by reference from you, a copy of a resolution adopted by the Senate of the United States on June 14, 1906, directing the Secretary of the Interior to transmit to the Senate the report of Dr. Sheldon Jackson upon the introduction of domestic reindeer into the district of Alaska, for 1905, together with the maps and illustrations.

In compliance with said resolution, I have the honor to forward herewith the report of the United States general agent for education in Alaska on the subject and covering the period named.

Very respectfully, your obedient servant,

W. T. HARRIS, *Commissioner.*

The SECRETARY OF THE INTERIOR.

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FIFTEENTH ANNUAL REPORT

ON THE

INTRODUCTION OF DOMESTIC REINDEER INTO ALASKA.

DEPARTMENT OF THE INTERIOR,
BUREAU OF EDUCATION, ALASKA DIVISION,
Washington, D. C., June 9, 1906.

SIR: I have the honor to submit the fifteenth annual report (covering the year 1905) on the introduction of domestic reindeer into Alaska.

The present year completes a decade and a half of the history of the reindeer work, dating from the initial experiment made in 1891 in the purchase of domestic reindeer from Siberia for importation into Alaska, and the thirteenth year since the Government assumed the responsibility of the work by an act of Congress appropriating "\$6,000 to be expended under the direction of the Secretary of the Interior for the purpose of introducing and maintaining in the Territory of Alaska reindeer for domestic purposes."^a

The necessity of such action as a means of saving the inhabitants of the northern and northwestern regions of the Territory from starvation had been impressed upon me at the time of my first visit (1890) to Arctic Alaska with a view to establishing schools in that region for the natives. The abundant growth of reindeer moss in the country had already attracted the attention of Captain Healy, of the United States Revenue-Marine Service, and of scientific men familiar with the resources of Alaska and with the sight of herds of tame reindeer on the plains of Siberia. Indeed, as early as 1885, in the report of a cruise of the U. S. Revenue-Marine steamer *Corwin*, the desirability of introducing the domestic reindeer of Siberia into Alaska had been suggested.^b

But it was not until 1890 that steps were taken to bring it about. In that year upon my return to Washington from my annual inspection of schools in Alaska, in a preliminary report dated November 12, 1890, to the Commissioner of Education, I called attention to the destitution

^aFor preliminary reports to Congress on the importation of domestic reindeer into Alaska see Report on Introduction of Domestic Reindeer into Alaska, 1892, Senate, Miscellaneous Document No. 22, Fifty-second Congress, second session.

^bSee Appendix, page 163, also Preliminary Report of the General Agent of Education for Alaska, 1890, page 13.

of the Eskimos of northwestern Alaska, with the recommendation that Siberian reindeer be introduced into Alaska for their relief.

This report was transmitted December 26, 1890, by the Commissioner of Education, with his approval of the recommendation, to the Secretary of the Interior, who in turn, on the 15th of December, 1890, transmitted the same to the Senate.

Upon the failure of the Fifty-first Congress (1890-91) to take action, and deprecating the delay of 12 months before another attempt to secure Congressional action, with the approval of the Commissioner of Education I made an appeal in the spring of 1891 to the general public, through the newspapers of the East, for contributions to this object. The response was prompt and generous; \$2,146 were received. With this fund I commenced the purchase of reindeer in Siberia and their transfer to Alaska.

At length, on March 3, 1893, Congress appropriated \$6,000 for the introduction of domestic reindeer into Alaska.

The management of this fund was intrusted by the Secretary of the Interior to the Commissioner of Education, and the introduction of domestic reindeer into Alaska and the instruction of natives in the arts of herding, harnessing, driving, etc., was made a part of the scheme of industrial education maintained by the Government in Alaska.

The present condition and prospects of the work confirm the opinions that prompted the undertaking and prove the wisdom of the plans by which it has been carried on. The era of experiment has closed, and it only remains to continue the work under the supervision of the Government until its benefits, social and industrial, have been extended to all the people of Arctic Alaska.

SUMMARIZED STATISTICS OF THE REINDEER HERD.

The following tables show the number of domestic deer imported into Alaska from Siberia, the annual increase of the herd, and the annual appropriations by Congress for the work:

TABLE 1.—*Deer imported from Siberia and total in herd, 1892-1905.*

[The Russian Government placed such restrictions upon the purchase of reindeer from the natives that no deer were obtained in 1896 and 1897, and the importation of deer ceased altogether with 1902.]

Year.	Imported from Siberia.	Total in herd.	Year.	Imported from Siberia.	Total in herd.
1892.....	171	143	1900.....	29	2,692
1893.....	124	323	1901.....	200	3,464
1894.....	120	492	1902.....	30	4,795
1895.....	123	743	1903.....	.....	6,282
1896.....	.....	1,000	1904.....	.....	8,189
1897.....	.....	1,132	1905.....	.....	10,241
1898.....	161	1,733	Total.....	1,280	.....
1899.....	322	2,394			

TABLE 2.—*Annual increase of fawns, 1893 to 1905.*

Table 2 shows that the increase by fawns for 1905 is two and a third times the entire importation of herds of deer from Siberia.

Year.	Balance from previous year.	Fawns surviving.	Increase of herds by fawns.	Year.	Balance from previous year.	Fawns surviving.	Increase of herds by fawns.
			<i>Per cent.</i>				<i>Per cent.</i>
1893	143	79	55	1900	2,394	756	32
1894	323	145	44	1901	2,692	1,110	41
1895	492	276	56	1902	3,464	1,654	48
1896	743	357	49	1903	4,795	1,877	40
1897	1,000	466	46	1904	6,282	2,284	36
1898	1,132	625	55	1905	7,263	2,978	41
1899	1,733	638	37				

TABLE 3.—*Congressional appropriations for the introduction of domestic reindeer into Alaska.*

Fiscal year ending June 30—	Amount.	Fiscal year ending June 30—	Amount.
1894	\$6,000	1902	\$25,000
1895	7,500	1903	25,000
1896	7,500	1904	25,000
1897	12,000	1905	25,000
1898	12,000	1906	15,000
1899	12,500	Total	222,500
1900	25,000		
1901	25,000		

REINDEER STATIONS.

The herd, comprising in 1905, as shown above, a total of 10,241 deer, is distributed among three classes of stations, namely, Government stations, at which the school and the herd are entirely under Government control; mission stations, to each of which a small herd of reindeer has been loaned by the Government as an equipment for industrial training, and relief stations.

ARRANGEMENTS WITH THE MISSION STATIONS.

The arrangements with the mission stations propose:

1. The loan of small herds to the stations as an outfit of industrial apparatus, the same to be repaid to the Government at the end of a specified period by an equal number of young deer in the same proportion of male and female deer—i. e., 25 to 75. The slaughter or sale of female deer was strictly prohibited from the first. Male deer might be slaughtered or sold only with the advice and consent of the superintendent of the station.

2. That, on its part, the mission receiving a loan shall support a corps of apprentices while under instruction in the art of herding deer and training them to harness. An average of five years' apprenticeship is needed for the full training of apprentices in the management

of reindeer. As a reward of merit, each apprentice who has faithfully completed the term of service is given a few deer to form the nucleus of a personal herd.

3. The Government on its part provides the mission station with a competent teacher in the art of reindeer herding, harnessing, etc., for the period of five years, and pays his salary. The general regulations here outlined are determined in each case by contract, and are subject to such modifications as circumstances may require.

RELIEF STATIONS.

The relief stations have as their main object the maintenance of herds of reindeer at advantageous points, with a view to meeting emergencies such as arose in 1897-98 in connection with the expeditions under Lieutenant Jarvis, of the United States Revenue Marine Service, for the relief of the whalers ice bound in the Arctic Sea near Point Barrow, and with the efforts for the relief of a company of starving miners in the Yukon Valley.^a

STATISTICS OF REINDEER STATIONS.

The following tables present the chief items relating to the distribution, ownership, etc., of the reindeer at the several stations as reported in 1905. In the first of the series (Table 4) the mission stations are indicated by an asterisk:

TABLE 4.—Number and sex of deer in herds at the various stations in 1905.

Station.	Adults.			Fawns.			Total.
	Male.	Female.	Total.	Male.	Female.	Total.	
Barrow	169	298	467	72	93	162	629
Kivalina*			153			67	220
Kotzebue*	181	315	496	118	118	236	732
Deering*	106	225	331	69	79	148	479
Shishmaref*	113	208	321	66	73	139	460
Wales*	253	416	669	135	138	273	942
Gambell.....	64	91	155	16	18	34	189
Teller*	212	415	b 649			292	941
Golofnin*	297	511	808	187	169	356	1,164
Unalakleet*	335	427	762	144	114	258	1,020
Eaton*	343	423	766	127	115	242	1,008
Bethel*	280	613	893	221	215	436	1,329
Nulato*	47	147	194			96	290
Iliamna.....	109	190	299	76	63	139	438
Bettles ^c	75	225	300			100	400
Total	2,584	4,504	7,263	1,231	1,192	2,978	10,241

^a See Report of the Cruise of the United States Revenue Cutter *Bear* and the Overland Expedition for the Relief of the Whalers in the Arctic Ocean from November 27, 1897, to September 14, 1898; also Report on Introduction of Domestic Reindeer into Alaska, 1898, pages 19-44, 83-123.

^b Includes 22 deer unclassified as to sex.

^c No complete report received; number estimated.

TABLE 5.—*Reindeer sold, butchered, or died, 1892 to 1905.*

[When the slaughter of deer is spoken of, it in no case except one refers to the Government deer, but only to the deer which were the property of stations and apprentices, the same being the increase of the herds loaned to them. The Government deer loaned to the missions or to the Lapland herdsmen have to be returned deer for deer as loaned to them, and no one slaughters Government deer or gives them away. Male deer may be slaughtered or sold by the apprentices only with the advice and consent of the superintendent at the reindeer station. It has been understood that the superfluous males belonging to the station may be sold.]

Year.	Number.	Year.	Number.
1892	28	1899	299
1893	23	1900	487
1894	96	1901	538
1895	148	1902	353
1896	100	1903	290
1897	^a 334	1904	377
1898	185	1905	926

^a246 of these deer that were killed in the relief expedition to the whalers at Point Barrow belonged to the Government.

TABLE 6.—*Reindeer loaned.*

[The station at Wales received 118 deer in August, 1894, the same being deer that were purchased out of a fund of \$2,146 contributed by friends of the experiment in May and June, 1891, before the Congressional appropriations began. (See p. lx of the Report of this Bureau for 1903.)

The five Laplanders named in this table (marked with an asterisk) were brought over by the War Department in 1898 to assist in driving a herd of reindeer to the Yukon Valley, where American miners were reported to be in danger of starvation. After the disbanding of the expedition this office, under advice, took them into its employ to teach the Eskimo apprentices the industries connected with reindeer herding. As a return for their service they each received a loan of 100 deer for five years.]

Station.	Loaned.	When loaned.	When due.
Wales (Congregational)	118	Aug. —, 1894	Gift.
Golofnin Bay (Swedish Lutheran)	50	Jan. 16, 1896	Returned.
Tanana (Episcopal)	50	do	Do.
Nils Klemetsen*	100	July 1, 1902	July 30, 1907.
Teller (Norwegian Lutheran)	100	Sept. 1, 1900	Returned Sept., 1905.
Nulato (Roman Catholic)	100	Mar. —, 1901	Mar. —, 1906.
Bethel (Moravian)	88	Feb. 26, 1901	Feb. —, 1906.
Nils Persen Sara*	100	July —, 1901	June 30, 1906.
Carmel (Moravian)	88	Feb. 26, 1901	Feb. —, 1906.
Per M. Spein*	100	July —, 1901	June —, 1906.
Kotzebue (Friends)	95	Sept. 2, 1901	Sept. —, 1906.
Unalakleet (Swedish Lutheran)	100	July 1, 1903	June 30, 1908.
Alfred S. Nilima*	99	July —, 1901	June 30, 1906.
Ole O. Bahr*	100	July 1, 1901	Do.
Deering (Friends)	100	Jan. 18, 1905	Jan. 18, 1910.

Nils Klemetsen is in charge of the herd at Golofnin Bay; Nils Persen Sara in charge of the first Bethel herd; Per M. Spein in charge of the second Bethel herd; Alfred S. Nilima in charge of the Kotzebue herd; Ole O. Bahr in charge of the Unalakleet herd.

The following table (7), showing the ownership of reindeer at stations in 1905, taken in connection with table 8, pertaining to apprentices and their holdings, makes it very evident that the purpose of getting the reindeer into the possession of thrifty natives has been kept steadily in view, and is being realized as rapidly as the conditions permit. The Government owns 3,073 deer, the stations 2,127, Lapland herdsmen 1,189, and 78 apprentices 3,817 deer, or 37 per cent of the total number. It should be remembered that the deer owned by the Lapland herdsmen and the stations, or 32 per cent of the total, are in the nature of an equipment for the industrial training of the natives.

TABLE 7.—*Ownership of reindeer in 1905.*

Station.	Government.	Station.	Herders (Laplanders).	Apprentices.	Total.
Barrow	83			546	629
Kivalina				220	220
Kotzebue	194	215	271	40	^a 732
Deering	100	28		351	479
Shishmaref		166		294	460
Wales	189	216		537	942
Gambell	154			35	189
Teller	215	270		434	^b 941
Golofnin	132	462	187	383	1,164
Unalakleet	478		233	309	1,020
Eaton	214	189		604	^c 1,008
Bethel	376	391	498	64	1,329
Nulato	100	190			290
Iliamna	438				438
Bettles ^d	400				400
Total	3,073	2,127	1,189	3,817	10,241

^a 12 of these are sled deer owned by miners.^b 22 of these are unidentified.^c 1 of these is a sled deer belonging to the superintendent.^d Estimated; no report received.TABLE 8.—*Apprentices, with their holdings.*

Station.	When established.	Total deer, 1905.	Apprentices.	Deer owned by apprentices.
Teller	1892	941	5	434
Wales	1894	942	8	537
Golofnin	1896	1,164	12	383
Unalakleet	1897	1,020	8	309
Barrow	1898	629	10	546
Gambell	1900	189	3	35
Bethel	1901	1,329	4	64
Kotzebue	1901	732	4	40
Nulato	1901	290	3	
Eaton	1902	1,008	9	604
Kivalina	1905	220	2	220
Deering	1905	479	3	351
Iliamna	1905	438		
Bettles	1905	^a 400		
Shishmaref	1905	460	7	294
Total		10,241	78	3,817

^a Estimated; no complete report received.

From the next table (9), showing the present location of the 3,073 deer belonging to the Government, it appears that two-thirds of the number are under direct Government control and the remaining one-third still in charge of the stations or herders to whom they have been loaned.

TABLE 9.—*Deer belonging to the Government.*

Station.	Loaned.	Under direct control.	Total.	Station.	Loaned.	Under direct control.	Total.
Barrow	83	83	83	Nulato	100		100
Kotzebue	194	194	194	Bethel	376		376
Wales	189	189	189	Deering	100		100
Gambell	154	154	154	Iliamna		438	438
Teller	215	215	215	Bettles ^a		400	400
Golofnin	100	32	132	Total	1,070	2,003	3,073
Unalakleet	100	378	478				
Eaton	100	114	214				

^a Estimated; no report received.

The progress made in training male deer to harness is indicated by Table 10, from which it appears that on June 30, 1905, there were 392 deer already trained and 83 under training, a total of 475 deer, or very nearly 20 per cent of the entire number of adult male deer (2,462), as shown in Table 4.

TABLE 10.—*Number of trained sled deer.*

Stations.	Number trained.	Number in training June 30, 1905.	Total.	Stations.	Number trained.	Number in training June 30, 1905.	Total.
Unalakleet.....	38	15	53	Wales	41	.....	41
Eaton	32	23	55	Deering	14	.....	14
Nulato	6	2	8	Kivalina ^a.....	.....	.....	.....
Kotzebue	40	.....	40	Teller	45	16	61
Bethel	62	.....	62	Iliaamna ^a.....	.....	.....	.....
Gambell	20	2	22	Bettles ^a.....	.....	.....	.....
Barrow	22	.....	22	Total	392	83	475
Golofnin	52	25	77				
Shishmaref	20	.....	20				

^a None reported.

By reference to Table 6 it will be seen that in 1905 there were in the employment of the Government at mission stations 5 Lapland herders whose salaries were met by loans of reindeer on substantially the same conditions as the loans made to the mission stations. In addition to these 5 there was a Lapland herder at Teller, since sent to Tanana, where his salary is met by a loan of deer, and an additional Lapland herder at Nulato in receipt of a salary.

The 78 apprentices enumerated in Table 8 include a number who have successfully passed through their five years' period of training and are proving their trustworthiness and thrift in stations stocked by their own herds. Under the charge of such graduate apprentices three new stations have been opened during the year here reviewed, forming links in the chains of stations for each hundred miles along mail routes in arctic Alaska.^a

SUPERINTENDENTS.

For the general supervision of the reindeer stations two superintendents were employed during the year 1905 at an annual salary of \$1,500 each. To one of the superintendents was assigned the charge of the herds along the shores of the Arctic Ocean and northern Bering Sea and to the other the herds on the shores of Golofnin Bay, Norton Sound, and the valleys of the Yukon and Kuskokwim rivers.

MISSION STATIONS.

By far the largest number of stations included in the fifteen reported are mission stations that have received loans of small herds of deer for three or five years under agreements already explained.

^aSee statement of the Commissioner of Education to the Secretary of the Interior for the year ended June 30, 1905 (pp. 41-42).

Below is given a brief history of each of the mission stations, showing the beginning and the present status as to number of deer and as to distribution (a) to apprentices, (b) to station, and (c) to Government, and the cost to the Government for supplies as well as the cost to the Government for superintending the herds for the years specified (1904 and 1905). The principal items pertaining to the reindeer herds for successive years are also presented in tabular form in the case of the stations formed before 1904.

Wales (Congregational mission) received a herd of 118 reindeer from Teller station in 1894. This herd was regarded as a gift after the relief expedition of 1898 to Barrow and was never returned.

On July 1, 1904, Wales had 402 adult male deer, 717 adult female deer, and 369 fawns, making a total of 1,488 deer in the herd. Two colonies of reindeer were established from Wales in 1904, namely, Shishmaref, to which 389 deer were transferred, and Deering, which received 365 deer. Particulars pertaining to the two colonies are presented separately below.

The number of deer belonging to Wales station in 1905, after the formation of the two colonies, was 942, distributed as follows: Station, 216; deer owned by 8 apprentices, 537; deer owned by the Government, 189.

There has been no cost to the Government for supplies and superintending the herd from 1894 to 1906. In 1904 there were furnished this station sample harnesses costing \$29.90.

Deer at Wales Station.

[The number of deer and the number of fawns born year by year are given in this and similar tables without analysis or other explanation, such as would be afforded by knowing the transfers to and from the station.]

	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.
Number of deer.....	118	174	253	367	216	714	986	993	987	1,525	1,488	1,402
Number of fawns		75	84	116	(a)	79	237	228	479	427	369	273

^aIn 1898 the deer at Wales were taken for the relief expedition under Lieutenant Jarvis.

Shishmaref (colony of Congregational mission).—In August, 1904, there were driven from Wales 389 reindeer to establish a new herd at Shishmaref. On July 1, 1905, it had 321 deer, and 139 fawns, making a total of 460. The station owns 166 deer, and 7 native apprentices transferred from Wales own 294 deer. The Government has no deer in this herd, and has made no expenditures whatsoever on its account.

Deering station (Society of Friends).—On January 18, 1905, there were loaned to this station 100 head of reindeer for five years. Two Eskimo herders acting as teachers colonized from Wales (see Wales, above) with 265 deer, making a total at the station of 365 deer. On July 1, 1905, the herd had increased to 106 adult male deer, 225 adult

female deer, and 148 fawns, making a total of 479 deer, distributed as follows: The station has 128 deer, of which 100 are borrowed and returnable on July 18, 1910, and 3 Eskimo graduate apprentices own 351 deer. The entire cost to the Government of this herd is \$558.38, expended in 1905 for superintendence. This includes the cost of transferring the herd.

Golofnin Bay (Swedish Evangelical Union mission).—On January 16, 1896, there were loaned to this station 50 deer, and three years later (1899) 50 deer were returned to the Government. On July 1, 1904, the herd numbered 257 adult males, 382 adult females, and 285 fawns, making a total of 924 deer. In 1905 the numbers had increased to 297 males, 511 females, and 356 fawns, making a total of 1,164. Of this number 462 belong to the station, 383 to twelve Eskimo apprentices, 287 to the Lapp herder superintendent, Nils Klemetsen, and 32 to the Government. Of the deer belonging to Nils Klemetsen, 100 are a loan and are returnable to the Government on July 1, 1907.

Where a herd of 100 deer is loaned to the Lapp teacher its cash value per annum is estimated at \$600, equivalent to 30 fawns, annual increment, at \$20 each.

The Government has never expended any funds in behalf of this station.

Deer at Golofnin Station.

	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.
Number of deer.....	206	296	395	240	290	311	424	728	924	1,164
Number of fawns	94	115	129	147	78	80	95	215	285	356

Teller station (Norwegian Evangelical Lutheran).—This was a Government station from 1892 to 1900. On September 1, 1900, a Norwegian Evangelical Lutheran mission was established there, and 100 deer were loaned to the mission for five years. On September 1, 1905, the same number of deer were returned and marked for the Government, although they were retained in the herd. At the time of this loan, in addition to the 100 loaned to the mission, there were 221 deer belonging to the Government and 339 belonging to 5 Eskimo apprentices, making a total of 660 deer in the herd. On November 11, 1901, 194 of the Government deer were transferred to Kotzebue to form a new station, furnishing a loan of 95 deer to the Friends' Mission and 99 deer to the Lapp teacher Nilima, each for five years (see Kotzebue below).

In 1904 the herd at Teller comprised 225 adult male deer, 469 adult female deer, and 379 fawns, making a total of 1,073 deer. In 1905 the numbers were 223 adult males, 426 adult females, and 292 fawns, making a total of 941. During the winter of 1904-5, 300 of the Government deer were transferred to Unalakleet to replace those sent to Bettles.

The number of deer belonging to the station in 1904 was 314; in 1905, 270; number of deer owned by 5 apprentices in 1904 was 351; in 1905, 456; number of deer owned by the Government in 1904 was 408; in 1905, 215.

Deer at Teller Station.

	1901.	1902.	1903.	1904.	1905.
Number of deer	737	665	641	1,073	941
Number of fawns	254	235	198	379	292
Cost of supplies	\$413.28	\$1,141.54	\$2,189.34	.....	\$70.00
Salaries	\$1,778.50	\$898.33	.....	\$1,400.00	\$250.00

Unalakleet and Eaton (Swedish Evangelical Union).—On July 1, 1903, a loan of 100 reindeer was made to this station, the return being due July 1, 1908. Ole Bahr, a Lapp, had received a loan of 100 deer in 1901 for five years, securing his services as superintendent of the herd. He brought with him to this station 197 deer, making a total of 297 deer. Parts of herds were transferred to this herd from Eaton, Teller, and Golofnin Bay stations, increasing the herd to more than 1,500 before the year 1904.

On July 1, 1904, there were in the herd 546 adult male deer, 791 adult female deer, and 581 fawns, making a total of 1,918. In 1905 the numbers had increased to 678 adult males, 850 adult females, and 500 fawns, making a total of 2,028 deer. The number belonging to the station on July 1, 1905, was 289; to the Government herder, Ole Bahr, 333; to 17 Eskimo apprentices, 913; to the superintendent of the station, 1, and to the Government, 492.

The Government expended in 1904 \$181.19 for supplies and \$500 for superintending the herd. In 1905 no expenditure was made for the herd.

Bethel, Kuskokwim River (Moravian).—On February 26, 1901, 176 deer were loaned to the Moravian Missionary Society, Bethel, for five years. On July 1, 1901, a herd of 100 deer was loaned to Nils Persen Sara, Lapland herder, for five years' services. Another herd of 100 deer was loaned at the same time to Per M. Spein, Lapland herder, for five years' services.

On July 1, 1904, the herd comprised 280 adult male deer, 459 adult female deer, and 307 fawns, making a total of 1,046 deer. On July 1, 1905, the numbers were 280 adult males, 613 adult females, and 436 fawns, making a total of 1,329 deer, distributed as follows: Belonging to the station, 567; to the two Lapp herders, 698; to four Eskimo apprentices, 64. In 1906 there will be due the Government 376 reindeer for the loans to the mission and Laplanders. The Government expended nothing for this station during 1904 and 1905.

Deer at Bethel Station.

	1901.	1902.	1903.	1904.	1905.
Number of deer.....	257	645	792	1,046	1,329
Number of fawns.....	80	194	259	307	436
Salaries.....	\$500	\$1,000	\$1,000	.....	.....

Kotzebue station (Society of Friends).—On September 2, 1901, a loan of 95 reindeer was made to this station, the same number to be returned on September 2, 1906. On July 1, 1901, Alfred S. Nilima, a Lapp herder, was loaned 99 deer for five years for services as herder, the total number of deer at the station being 194.

On July 1, 1904, the herd comprised 482 adult deer and 232 fawns, making a total of 714 deer. The number at the station on July 1, 1905, was 181 adult male deer, 315 adult female deer, and 236 fawns, making a total of 732 deer. This apparently small increase is due to the fact that during the winter of 1904-5 two Eskimo herders with 220 deer were transferred to a new station at Kivalina. (See Kivalina, below.)

The ownership of the deer on July 1, 1905, was as follows: Belonging to the station, 310; to the Lapp herder, 370; to 4 Eskimo apprentices, 40; to white men, 12 male deer trained to harness and kept with the herd. There will be due to the Government from the station and from the herder 194 deer in 1906.

No expenditures have been made by the Government during the past two years for this station.

Deer at Koizebue Station.

	1902.	1903.	1904.	1905.
Number of deer.....	305	379	714	732
Number of fawns.....	97	100	232	236
Cost of supplies.....	\$113.13	\$612.60	.....	^a \$110.60

^a For transfer of herd to Kivalina.

Kivalina.—In the winter of 1904-5 two native herders, Electoona with a herd of 172 deer and Otpelle with a herd of 48 deer, making a total of 220 deer, were transferred to Kivalina, an important place on the Arctic Ocean, southeast of Point Hope. All of the deer in the herd belong to the apprentices. There has been no expense to the Government for this station with the exception of \$110.60 paid for transferring the herd.

Nulato (Roman Catholic).—In March, 1901, 100 reindeer were loaned to this station for a period of five years. In 1904 the herd comprised 150 adult deer and 66 fawns, making a total of 216 deer. In 1905 it numbered 47 adult male deer, 147 adult female deer, and 96 fawns, making a total of 290 deer.

The Government expended \$500 in 1904 and \$250 in 1905 for superintending the herd.

Deer at Nulato station.

	1901.	1902.	1903.	1904.	1905.
Number of deer.....		151	171	216	290
Number of fawns.....	36	44	41	63	96
Salaries.....	\$333.33		\$500.00	\$500.00	\$250.00

The most important of the items given in the foregoing review of the mission stations are brought together in the three following tables.

The first table, total number of deer at the chief mission stations in 1905, shows how all the stations are observing the regulation which forbids the slaughter of female deer. It shows that the male to female deer are in proportion of 2,178 to 3,711; the total number of deer at the mission stations is 8,588, out of the total of 10,241 for all the herds reported on July 1, 1905.

The second table gives the cost to the Government of the reindeer herds at the mission stations, showing an expense of only \$428.38 in 1905 for supplies, which was for services in removing herd, and for cash expenditure for superintending herd only \$810.60, making a total of less than \$1,300 for the entire expense to the Government paid from the appropriation of Congress for the support of the reindeer at mission stations, the same being an average of \$0.14 $\frac{1}{2}$ for each reindeer.

The third table shows the distribution of reindeer at the mission stations in 1905.

It will be seen that the number of deer belonging to the 65 apprentices is 3,236; the number belonging to the stations is somewhat less, namely, 2,698; the number belonging to the Lapland herders is 1,688, and the number owned by the Government at these mission stations is 1,070 due sometime in the future, and 928 under present direct control of the Government, some of them kept in the mission herds awaiting transfer to new stations, making a total belonging to the Government in these mission herds of 1,998. This table makes it clear that the mission stations are carrying out the purpose of the Government to get the deer into the possession of competent natives.

Total number of deer at the mission stations, 1905.

	Adults.			Fawns.	Total.
	Male.	Female.	Total.		
Wales.....	253	416	669	273	942
Shishmaref.....	113	208	321	139	460
Deering.....	106	225	331	148	479
Golofnin Bay.....	297	511	808	356	1,164
Teller.....	223	426	649	292	941
Unalakleet.....	678	850	1,528	500	2,028
Bethel.....	280	613	893	436	1,329
Kotzebue.....	181	315	496	236	732
Kivalina.....			153	67	220
Nulato.....	47	147	194	96	290
Total	2,178	3,711	6,042	2,543	8,585

Cost to the Government for reindeer herds at mission stations, 1905.

	For supplies.	For superintending herd.	
		By annual rental value of deer loaned Lapp teachers, and not in cash.	By cash.
Wales			
Shishmaref			
Deering	<i>a</i> \$358.38		\$200.00
Golofnin Bay		\$600	
Teller	70.00		250.00
Unalakleet		600	
Bethel		1,200	
Kotzebue		600	
Kivalina			110.60
Nulato			<i>b</i> 500.00
Total	428.38	3,000	810.60

a For one year an allowance for supplies was made to the herders on account of driving the herd from Wales to Deering.

b For transferring herd to colony.

Distribution of reindeer at mission stations, 1905.

Belonging to station.	Lapland herd-ers.		Apprentices and native herders.		Under direct control of Government or due from stations and herders.	
	Number.	Deer belonging to.	Number.	Deer belonging to.	Number.	Remarks.
Wales	216		8	537	189	
Shishmaref	166		7	291		
Deering	<i>a</i> 128		3	351	100	Due January, 1910.
Golofnin Bay	462	1	<i>a</i> 287	12	383	100 due July, 1907.
Teller	270			5	434	
Unalakleet (Eaton)	<i>a</i> 289	1	<i>a</i> 334	17	913	200 due July, 1906, and July 1908.
Bethel	<i>a</i> 567	2	<i>a</i> 698	4	64	Due February, 1906.
Kotzebue	<i>a</i> 310	1	<i>a</i> 370	4	40	Due September, 1906.
Kivalina				2	220	
Nulato	<i>a</i> 290			3	100	Due March, 1906.
Total	<i>a</i> 2,698	5	<i>a</i> 1,688	65	3,236	1,070
						Due; 928 under direct control.

a Including number due Government.

ECONOMY IN REINDEER INSTRUCTION.

With respect to economy in reindeer instruction the experience of the Bureau of Education has thus far been in favor of the mission station rather than the Government herd. The chief expense in the management of a reindeer station is the support of the apprentices, who must be supplied with rations while learning the care of the herd. Inasmuch as some of the older apprentices are married and have families it has been necessary in some cases to supply with rations not only the apprentice but also his wife and children.

The missions in providing support for apprentices assume, therefore, the chief expense in the reindeer instruction. Estimating the expense per apprentice at \$500 per year—an expense which has to be met in

some stations under the Government and which is liable to be incurred at any time if the superintendent of the herd is not a careful manager, preventing the sharing of rations on the part of the apprentice with his relatives—the 65 apprentices at the missions would cost an annual sum of \$32,500. Estimating the expense at missions at one-third of this sum, by reason of the thrift which obliges the Eskimo families to derive most of their support from what is called native food (whale, walrus, seals, wild birds, and game), the minimum amount contributed to the support of reindeer instruction by the mission stations is something over \$10,000 per annum or two-thirds as much as the Government appropriation of \$15,000.

The annual cost to the Government for a mission station comprises the salary of a skilled herder and the annual increase of the loan of 100 deer, equivalent to about 30 fawns valued at \$20 per head. As already explained, at the end of five years it is unnecessary for the Government to supply a chief herder at mission stations, as by that time the apprentices will have learned the art of herding and training for harness, and all expense to the Government in connection with such herds ceases, except what may be necessary for inspection purposes to see that the law is complied with and that female deer are not slaughtered.

Ownership of reindeer, 1905.

BARROW.

Owners.	Adults.			Fawns.			Total.
	Male.	Female.	Total.	Male.	Female.	Total.	
Government.....	26	39	65	8	10	18	83
Tak tuk	11	28	39	7	7	14	53
Ah look	43	99	142	24	30	54	196
Shoud la.....	29	32	61	6	12	18	79
Pan eo neo	15	26	41	6	5	11	52
Se ge van.....	12	23	35	6	8	14	49
Pow yun.....	15	20	35	6	7	13	48
In gno ven	7	6	13	3	3	6	19
Un ga wish ak.....	9	14	23	2	4	6	29
Pa ni ge o.....	2	7	9	1	4	5	14
Jas. Brower, jr.....		4	4	3		3	7
Total	169	298	467	72	90	162	629

KIVALINA.

E lec too na			121			51	172
Ot pelle			32			16	48
Total			153			67	220

DEERING.

Ke ok	72	159	231	45	51	96	327
Kar mum.....	6	9	15	3	2	5	20
Stan ley	2	1	3	1		1	4
Friends Mission	26	56	82	20	26	46	128
Total	106	225	331	69	79	148	479

Ownership of reindeer, 1905—Continued.

KOTZEBUE.

Owners.	Adults.			Fawns.			Total.
	Male.	Female.	Total.	Male.	Female.	Total.	
Ni li ma	85	158	243	60	60	120	363
O ko mon	1	4	5	2	2	4	9
Og hoa look	2	5	7	2	2	4	11
Mi nun gon	3	4	7	2	2	4	11
Mun nok	1	4	5	2	2	4	9
Nils Bals	7		7				7
White miners ^a	12		12				12
Friends Mission	70	140	210	50	50	100	310
Total	181	315	496	^b 118	^b 118	^b 236	732

SHISHMAREF.

Sok we na	28	54	82	19	18	37	119
Enung wouk	17	28	45	6	12	18	63
I ya tun guk	16	25	41	9	8	17	58
Syn nok	13	11	24	3	3	6	30
Kiyuk tuk	5	6	11	2	2	4	15
Wood lek	2	2	4				4
Kar mum	4		4				4
Ke ok	1		1				1
Congregational Mission	27	82	109	27	30	57	166
Total	113	208	321	66	73	139	460

WALES.

Government	10	108	118	37	34	71	189
Oo ten na	88	117	205	30	38	68	273
Kiv year zruk	67	44	111	9	16	25	136
I bi o no	14	16	30	5	5	10	40
Ok ba ok	12	18	30	10	3	13	43
E ra he ruk	4	15	19	6	3	9	28
As a zruk	1	3	4		2	2	6
Kit sen na		3	3	1	2	3	6
Ad loo at		2	2	1	1	2	4
Ke ok	1		1				1
Congregational Mission	56	90	146	36	34	70	216
Total	253	416	669	135	138	273	942

GAMBELL.

Government	55	74	129	11	14	25	154
Si pil lu	6	9	15	2	3	5	20
Pe nin	2	7	9	2	1	3	12
Pun ga wi yi	1	1	2	1		1	
Total	64	91	155	16	18	34	189

TELLER.

Government	28	145	173			42	215
Ab li kok	55	94	149			72	221
Dun nak	22	49	71			28	99
Se ke o glook	21	43	64			30	94
Se raw look	1	5	6			4	10
Kox rook		5	5			5	10
Outside of corral (not identified)	11	11	22				22
Norwegian Lutheran Mission	85	74	159			111	270
Total	223	426	649			292	941

^aSled deer bought by miners.^bApproximate.

Ownership of reindeer, 1905—Continued.

GOLOFNIN.

Owners.	Adults.			Fawns.			Total.
	Male.	Female.	Total.	Male.	Female.	Total.	
Government.....		21	21	6	5	11	32
Nils Klemetsen.....	66	130	196	46	45	91	287
Tau took.....	51	82	133	32	28	60	193
John A pak and brother	16	23	39	8	5	13	52
Tak tuk	9	22	31	8	9	17	48
A mahk too lik	7	12	19	6	3	9	28
John Pomerot chak	2	10	12	3	1	4	16
Albert Ango tuk.....	1	6	7	1	1	2	9
Benjamin.....	2	5	7	2	1	3	10
Laury	1	1	2	—	2	2	4
Simon.....	1	4	5	1	2	3	8
E ge lak	2	2	4	1	1	2	6
Mrs. Dexter.....	4	3	7	1	1	2	9
Swedish Mission.....	135	190	325	72	65	137	462
Total	297	511	808	187	169	356	1,164

UNALAKLIK.

Government.....	126	189	315	37	26	63	378
Ole Olsen Bahr.....	106	117	223	51	58	109	332
Tat pan.....	51	42	93	23	13	36	129
O kit kon.....	30	30	60	20	8	28	88
I van off.....	12	22	34	9	4	13	47
Ke nik	—	4	4	1	1	2	6
Bi kon gan	3	5	8	—	3	3	11
Moses Kau chak.....	1	8	9	2	1	3	12
A vo gook	5	8	13	1	—	1	14
Pa neptjok.....	—	2	2	—	—	—	2
A. E. Karlson.....	1	—	1	—	—	—	1
Total	335	427	762	144	114	258	1,020

EATON.

Government.....	3	111	114	—	—	—	114
Mary An dre wuk.....	164	81	245	43	29	72	317
Kok toak.....	20	12	32	8	7	15	47
Nallo go roak.....	16	26	42	9	19	28	70
An go look	21	16	37	4	8	12	49
Sago nuk	20	12	32	5	7	12	44
Ami kra yinik	8	10	18	3	4	7	25
Acce buk	11	11	22	5	3	8	30
Sak pil lak	7	7	2	2	2	4	11
Frank Kau chak	9	9	—	—	2	2	11
A miner (who purchased sled deer from an apprentice).....	1	—	1	—	—	—	1
Swedish mission.....	79	128	207	48	34	82	289
Total	343	423	766	127	115	242	1,008

BETHEL.

Sara	96	163	259	70	67	137	396
Spein	77	125	202	59	41	100	302
Wase ly	6	14	20	4	1	5	25
Robert	6	12	18	2	4	6	24
Tony	2	5	7	1	—	1	8
Henry	2	4	6	1	—	1	7
Mission.....	91	290	381	84	102	186	567
Total	280	613	893	221	215	436	1,329

NULATO.

Roman Catholic Mission	—	—	194	—	—	96	290
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Ownership of reindeer, 1905—Continued.

ILIAMNA.

Owners.	Adults.			Fawns.			Total.
	Male.	Female.	Total.	Male.	Female.	Total.	
Government.....	109	190	299	76	63	139	438

BETTLES.^a

Government.....	300	100	400
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^a No report received; number estimated.

The historical table appended shows that the entire cash expenditure by the Government for seven missions stations amounted in 1904 to \$2,581.19 and in 1905 to \$1,238.98, or an annual average for the two years of \$1,910.08.

Historical table of reindeer in Alaska, by stations, 1894–1905, showing reindeer apprentices, supplies, and salaries.

[NOTE.—This table does not include the reindeer stations at Deering and Kivalina established during the fiscal year ending June 30, 1905. For the former the Government expended in 1905, \$358.38 for supplies on account of transfer of herd and \$250 for superintending herd.]

	1894.				1895.			
	Deer, June 30.	Ap- prenti- ces.	Supplies.	Salaries.	Deer, June 30.	Ap- prenti- ces.	Supplies.	Salaries.
Teller.....	588	15	\$2,187.15	\$540.58	399	9	\$3,709.58	\$683.80
Nome (Synrock, Rodney, Douglas).....	.....	.....	.....	.....	194	(a)	.....	.....
Wales.....	.....	.....	.....	.....	174	6	.....	.....
1896.								
Teller.....	423	6	\$4,613.33	.....	525	7	\$4,248.69	\$2,982.20
Nome (Synrock, Rodney, Douglas).....	218	(a)	.....	.....	278	(a)	.....	.....
Wales.....	253	5	.....	.....	367	(a)	.....	.....
Golofnin.....	206	4	.....	.....	296	(a)	.....	.....
Unalaklik (Eaton).....	.....	.....	.....	.....	.....	.....	1,174.46	.....
1898.								
Teller.....	197	3	\$424.63	.....	300	4	\$771.83	.....
Nome (Synrock, Rodney, Douglas).....	.....	.....	.....	.....	328	(a)	.....	.....
Wales.....	216	(a)	.....	.....	714	(a)	.....	.....
Golofnin.....	395	4	.....	.....	240	2	.....	.....
Unalaklik (Eaton).....	671	3	251.25	.....	442	1	3,347.41	.....
Barrow.....	391	.....	.....	.....	125	1	.....	193.18
Gambell.....	.....	.....	.....	.....	261	1	.....	.....
Tanana (St. James).....	.....	.....	.....	.....	.....	.....	.....	.....

^a Number not reported.

Historical table of reindeer in Alaska, by stations, 1894-1905, showing reindeer apprentices, supplies, and salaries—Continued.

	1900.				1901.			
	Deer, June 30.	Apprentices.	Supplies.	Salaries.	Deer, June 30.	Apprentices.	Supplies.	Salaries.
Teller.....	660	4	\$753.62	\$650.00	737	11	\$413.28	\$1,778.50
Nome (Synrock, Rodney, Douglas).....	400	2	.....	.....	507	8	.....	.....
Wales.....	986	(a)	.....	.....	993	(a)	.....	.....
Golofnin.....	290	3	.....	.....	311	3	.....	.....
Unalaklik (Eaton).....	588	2	4,963.66	5,777.31	686	5	1,002.54	2,707.55
Barrow.....	137	1	1,360.68	.....	227	7	71.85	1,200.00
Gambell.....	70	.....	.....	.....	87	3	2,727.34	2,443.00
Tanana (St. James).....	92	(a)	.....	.....	257	(a)	.....	500.00
Bethel.....	.....	.....	.....	.....	.....	.....	.....	333.33
Nulato.....	.....	.....	.....	.....	.....	.....	.....	.....
1902.								
Teller.....	665	11	\$1,141.54	\$898.33	641	7	\$2,189.34	.....
Wales.....	987	14	.....	.....	1,525	9	.....	.....
Golofnin.....	424	5	.....	.....	728	12	.....	.....
Unalaklik (Eaton).....	1,198	15	1,701.63	200.00	1,503	16	1,418.50	978.04
Barrow.....	623	9	731.15	1,200.00	612	11	818.99	839.25
Gambell.....	150	3	2,062.69	561.70	154	3	2,060.12	.....
Bethel.....	645	2	.....	1,000.00	792	4	.....	1,000.00
Nulato.....	151	3	.....	.....	171	3	.....	500.00
Kotzebue.....	305	3	118.13	.....	379	3	612.60	.....
1904.								
Teller.....	1,073	5	.....	\$1,400.00	941	5	\$70.00	\$250.00
Wales.....	1,488	9	.....	.....	1,402	15	.....	.....
Golofnin.....	924	9	.....	.....	1,164	12	.....	.....
Unalaklik (Eaton).....	1,918	10	\$181.19	500.00	2,028	17	.....	.....
Barrow.....	598	10	855.35	1,500.00	629	10	.....	.....
Gambell.....	212	4	3,122.58	3,274.29	189	3	888.72	1,100.00
Bethel.....	1,046	4	.....	.....	1,329	4	.....	.....
Nulato.....	216	3	.....	500.00	290	3	.....	250.00
Kotzebue.....	714	6	.....	.....	732	4	110.60	.....
Bettles.....	300	(a)	157.90	.....	340	.....	2,489.41	1,500.00
Iliamna.....	300	(a)	1,939.62	300.00	438	(a)	2,179.90	3,350.00

a Number not reported.

ESKIMO REINDEER APPRENTICES.

CHARACTER AND PROGRESS, WITH SIZE OF HERD, BY YEARS.

ABLIKAK (Teller Station). His father, Wocksock, was one of the first Eskimos taken as apprentices. He entered the herd at Teller in 1893. During the epidemic of measles, etc., in 1900, the entire family died except Ablikak, then a boy of 12 years of age. The dying mother asked Reverend Brevig to act as her son's guardian. Since then Ablikak has lived with the Brevigs. He came to the States with them in 1904, attended a public school, and returned to Teller with them in the summer of 1905. He inherited from his father in 1901 115 deer. Increase as follows: 1902, 125; 1903, 157; 1904, 191; 1905, 221.

ACCEBUK (Eaton). Joined Mary Antisarlook's herd as an apprentice in 1900. Is now about 22 years old. Has done much toward the support of his father and crippled mother and two younger brothers. Is trustworthy. His herd increased as follows: 1901, 11; 1902, 31; 1903, 23; 1904, 27; 1905, 30.

AHLOOK (Barrow). In 1894 he and Electoona were sent by the missionaries at Point Hope to Teller to learn reindeer herding. As an apprentice Ahlook showed great interest in the deer. During foggy nights he frequently spent the whole night in keeping the herd together. Mr. Kjellman reported him as the best herder at Teller. He accompanied Lieutenant Jarvis on the famous relief expedition to Barrow. Spent one winter at Unalakleet, another at Point Hope, and moved to Barrow in 1901. He married in 1897. In 1905 he was sent to Wainwright. His wife is a sister of Shoudla and a daughter of Oyello. With Powyun he shares the distinction of driving the first reindeer mail between Barrow and Kotzebue, overcoming obstacles that would have daunted many white men. The size of his herd from year to year is as follows: 1898, 11; 1899, 50; 1900, 50; 1901, 75; 1902, 118; 1903, 140; 1904, 185; 1905, 196.

AMAHKTOOLIK (Golofnin). Employed by his brother Tautook as a subapprentice in 1900. Is about 23 years old and is considered a good driver. Married a girl from the mission in 1904. The size of his herd year by year is as follows: 1903, 15; 1904, 19; 1905, 28.

AMIKRAVINIK (Eaton). Is now (1905) 13 years old. An apprentice in Mary Andrewuk's herd. Sagoonuk is his brother. His herd increased as follows: 1902, 11; 1903, 10; 1904, 17; 1905, 25.

MARY ANTISARLOOK (Andrewuk). Charlie Antisarlook, Mary's first husband (whom she married in 1889), was the first Eskimo loaned reindeer. In January, 1895, he was loaned 120 deer in partnership with two others. This was done to show that the Government intended the deer for the natives. The herd was well taken care of, and in 1898, just three years after he had received the loan, Charlie returned 100 deer to the Government, keeping their increase of 160 head. Many of Charlie's family entered his herd as apprentices and obtained a good living from the deer. In December, 1897, Lieutenant Jarvis came to their camp and asked Charlie to accompany him with his whole herd to Barrow to rescue the whalers. As the herd furnished the entire living of the family it meant a great deal for him to agree to this.

However, he gave up all his deer and went with Lieutenant Jarvis on the long trip to Barrow. During that winter Charlie had charge of all the deer at the station. During the epidemic of measles in 1900 Charlie and his brothers died, leaving their large herd to Mary, thus making her the richest Eskimo in Alaska. Mary served as Doctor Jackson's interpreter on his first trip to Siberia in 1890. When Lieu-

tenant Jarvis came to take their herd to Barrow in 1897 Mary, who would suffer the most in consequence, made the following pathetic speech:

Tell Mr. Jarvis we are sorry for the people at Point Barrow and we want to help them, but we hate to see our deer go because we are poor and our people in the village are poor, and in the winter when we can not get seals we kill a deer and this helps us through the hard times. If we let our deer go, what are we to do? Antisarlook and I have not enough without them to live upon.

But her husband took his deer and started for the far north, leaving Mary orders on neighboring stores for food supplies. A few years ago (1902) she married Andrewuk, an Eskimo, who takes no active interest in the reindeer.

Mary has raised and cared for 8 or 10 little Eskimo girls and boys, having had no children of her own. Six herders have received their start in her herd. Antisarlook was loaned 120 deer in 1895 before the fawning season. After the fawns were born the herd numbered 197. This number increased to 218 in 1896 and to 278 in 1897. The herd had grown so large in 1898 that Antisarlook was able to return the 120 deer loaned him by the Government, retaining 160 deer as his own property. These were taken by the Barrow Relief Expedition and enough returned him in 1899 to increase the herd to 328. Antisarlook died in 1900 leaving his wife Mary 400 deer. The herd decreased slightly during the next few years until it was driven to Eaton, where it is cared for with the Government herd, Mary paying 2 $\frac{1}{2}$ female deer every year for this supervision. Since Mary has owned the herd it has been reported as follows: 1901, 370; 1902, 269; 1903, 252; 1904, 358; 1905, 317.

ANGOLOOK (Eaton). A brother of Charlie Antisarlook. Took care of Mary's herd as an apprentice in 1900. Is about 20 years of age. Superintendent at Gambell said he was capable and bright. He accompanied Mr. Johnson to Bethel with the herd in November, 1904. While on the return trip he and Sagoonuk were compelled to rebel and leave Mr. Johnson, by the threats of Nallogoroak and Okitkon, both older and stronger. Mr. Lind recommended that as Angolook and Sagoonuk were but boys they should not be held to blame. Mr. Lind says he is one of the best boys in the herd, quick, and always at work. He knows every deer in the herd and takes the greatest interest in each one. His herd increased as follows: 1901, 14; 1902, 35; 1903, 43; 1904, 58; 1905, 49.

APAK, JOHN (Golofnin). On the death of his brother Constantine (see Constantine) in 1904 Apak inherited 43 deer. He is about 30 years of age. Has made many journeys with the deer. Is handy with tools. Has a wife and three children. The size of his herd increased to 52 in 1905.

AVOGOOK (Unalakleet). Is about 20 years old. Began his apprenticeship in 1900. Mary Antisarlook supported him for some time until he became Mr. Bahr's apprentice. Is a good driver. The size of his herd year by year is as follows: 1902, 11; 1903, 7; 1904, 17; 1905, 14.

AZARUK (Wales). About 20 years old (1905). Became apprentice of Keok during winter 1902-3, but after Keok's departure to Deering he has been a mission apprentice. He owns 6 deer.

BIKONGAN (Unalakleet). Is about 18 years old. Is an apprentice to his uncle Okitgon. Mr. Lind reports that he is an industrious and reliable young man. He was given 4 deer in 1904, which was increased to 11 in 1905.

COCKSROOK. He was taken as an apprentice in the mission herd at Teller in 1900; is about 25 years old. He is not proficient as a trainer or driver, but is one of the best herders at the station. He married a cousin of Tautook in 1901, and has no children. He was given 10 deer in 1905.

CONSTANTINE (Golofnin). Received as an apprentice at Golofnin in 1897. He learned to speak English well and was unusually bright. He died while on a visit to the States (Iowa) in the summer of 1904, leaving his herd to his brother Apak. (See Apak.) The size of his herd year by year until his death was as follows: 1898, 4; 1899, 5; 1900, 12; 1901, 17; 1902, 27; 1903, 34; 1904, 43.

DANNAK (Teller). As Dannak was a bright and industrious young man, and his father an influential man in the community, his application for a position in the herd at Teller was accepted and his term of apprenticeship began in 1895. In 1897 Dannak went with the herd to Unalakleet, where he stayed until 1899, and then returned to Teller. In 1900 he received 25 deer for his five years of service, with a loan of 25 more for five years. During the epidemic of measles in 1900 he was the only herder able to attend to his duties, and was about to yield to the disease when help came. Mr. Brevig, superintendent of the Teller station, says of Dannak, that he is a good manager, trainer, and driver. "He is safe anywhere with a train of loaded sled deer or with a herd, and, next to Tautook, best able to care for a herd if left without supervision."

His herd has not increased as fast as some others, because he has always had to sell female deer to the Government in order to support his relatives. Ever since his connection with the herd he has supported his father, sister, and two brothers, with their families, in addition to his own immediate family. He has made several long trips, both with single deer and with long trains of loaded deer. The size of his herd year by year is as follows: 1900, 50; 1901, 66; 1902, 77; 1903, 84; 1904, 72; 1905, 99.

ELECTOONA. Electoona was sent to Teller in 1894 by the missionary at Point Hope, that he might learn something about the management of a reindeer herd. On February 14, 1897, he drove all night from the camp to the station to procure medical aid for one of the Lapps. This was considered especially noteworthy, because the deer had recently been tamed and trained by Electoona himself. He accompanied Lieutenant Jarvis on the relief expedition to Barrow in 1898 and remained there for several years. In the fall of 1903 he and Otpelle were sent with deer to Kotzebue. However, they stopped at a village on the way and remained there until a Lapp was sent to bring them in. Some of the deer had been killed for food and several fawns had died from careless handling. The two herders were in such a destitute condition that the missionary at Kotzebue had to furnish them with rations.

In 1904 Electoona was sent with his herd to open a new station at Kivalina. The size of his herd from year to year is as follows: 1898, 11; 1899, 50; 1900, 50; 1901, 75; 1902, 108; 1903, 113; 1904, 158; 1905, 172.

KAUTCHAK, MOSES (Unalakleet). About 20 years old (1905). Has been Stephen Ivanoff's apprentice for three years. Mr. Bahr (chief herder) has the greatest confidence in him. Has done some freighting. Is fully qualified for all the work that comes to a herder's share. Is always patient and kind to the deer and is never found to idle away his time. Size of the herd, 1903, 2; 1904, 5; 1905, 12.

IBONO, PETER. Is about 26 years old. Became an orphan at 15. The youngest of his brothers is Thomas Illayok, the assistant teacher at Wales. He became a herder in 1900 and was married in 1902. The size of his herd from year to year is as follows: 1902, 18; 1903, 19; 1904, 7; 1905, 40.

IVANOFF, STEPHEN. "Is one of the most thrifty natives I know. He runs a trading post and road house with success. He has also built several schooners at Unalakleet, some of which he has sold, and others he uses for his own business. In all, he is a man that stands at the head of his race and is a good example for them."

Was for some time interpreter at the mission. At the death of a former apprentice (Martin) Ivanoff was allowed to buy his deer and some from the Government to make his total 12. He does not stay by the herd himself but supports a good boy as his apprentice (Moses Kautchak). Is a good driver and has done considerable freighting. Has four children. Writes and reads English well.

The size of his herd from year to year is as follows: 1901, 24; 1902, 33; 1903, 42; 1904, 48; 1905, 47.

KEOK. Began apprenticeship in 1893. Is about 27 years old (1905). He accompanied Mr. Lopp on the Barrow relief expedition. Mr. Lopp

says that he reads and writes English well and that he is a good deer man. During 1905 he was sent to Deering as head herder at the station established there. In 1905 his herd at Deering numbered 327, being the largest herd owned by an Eskimo. Owing to his ability to speak English and to keep accounts he has acted as secretary and book-keeper for the independent herders. While returning from Barrow after the relief expedition one of the natives in his company found a small herd of deer which had recently stampeded from the main herd. Keok immediately took charge and sent a letter to Lieutenant Bartholf at Point Hope, asking where he should drive the deer. He was instructed to bring them to Point Hope. As there were no sled deer in the herd he was compelled to first break some to harness before he could proceed. After many hardships he brought the herd to its destination in good condition. Besides rendering material assistance to his own people, he has supported a subapprentice for several years. Size of his herd, 1902, 175; 1903, 221; 1904, 88; 1905, 327.

KIVYEARGRUK (Wales). Began his apprenticeship at Teller in 1893. Is at present about 26 years old. During a blizzard in 1893 he remained alone with the herd without food for a considerable time while his companion, Sokwena, made his way to the station to procure provisions and assistance. He was one of the herders Mr. Lopp took with him to Barrow on the relief expedition in 1898. Owns a furnished house and keeps his brother as a subapprentice. His herd has increased as follows: 1902, 166; 1903, 201; 1904, 93; 1905, 136.

KOKTOAK (Eaton). About 27 years of age. Being a brother of Charlie Antisarlook, he was enrolled among his apprentices and joined the herd in 1893 or 1894. He accompanied Mr. Lind to Bettles during the winter of 1904 and 1905. Is a good herder, kind and careful with the deer, but is extremely slow. Has done freighting for miners and gave satisfaction. Is married. His herd increased as follows: 1901, 20; 1902, 35; 1903, 29; 1904, 46; 1905, 47.

KOZETUK. He soon became a good driver of deer. In May, 1901, with one companion, he took a train of 18 loaded sleds to a creek about 65 miles from the station, himself driving a string of 5 deer, with loaded sleds, the last 4 being tied to the front sled. From there he alone took 2 sled deer and 10 loose deer to Mr. Lopp's herd, 45 miles distant, returning to camp, and in a week taking 10 more to Mr. Lopp. On June 1 he started on his return trip with 4 deer and 8 empty sleds during the worst possible condition of travel, the snow melting rapidly and the ice in the rivers beginning to break up. He arrived at the station in three days without accident and the deer in good condition. He had traveled 245 miles with a string of deer and all alone, thus showing that reindeer could be driven with success by a native. This was done before he had completed his first year's apprenticeship.

Later on he made two trips to Shishmaref and one to Golofnin from Teller. Unfortunately Kozetuk was not a faithful herder. In 1903 he was suspended for disobedience, but was reinstated on promising improvement. But after remaining with the herd for a short time he disappeared again and has not returned.

NALLOGOROAK (Eaton). Began his apprenticeship in 1899. Is married. In November, 1902, he accompanied two Lapps to Teller to bring a herd from that station to Unalakleet. Then, in 1903, he assisted in taking a herd from Unalakleet to Bethel and return. Again, in 1904, under Mr. Johnson, he made the trip to Bethel. Things went well until they were a few miles from Bethel, when Nallogoroak and Okitkon wished to stop and make tea. However, as they had made tea but a few miles back and as there was a better camping place farther on, Mr. Johnson determined to push on. Then Nallogoroak and Okitkon tore everything off their sleds and, leaving Mr. Johnson without even a sled deer, returned to Bethel. They had also compelled the two younger herders (Sogoonuk and Angolook) to follow their example. However, they soon saw the folly of their action and returned to Mr. Johnson, with profuse apologies. When Doctor Campbell resigned as superintendent at Unalakleet in 1901, Nallogoroak was loaned 20 deer (18 females). This will account for the large size of his herd after so few years of apprenticeship. He supports his own family, two brothers-in-law, and his mother-in-law. His herd increased as follows: 1901, 11; 1902, 50; 1903, 42; 1904, 63; 1905, 70.

NULUK (Teller). While a child Nuluk was taken care of by Mr. and Mrs. Brevig. In 1901 he was taken into the mission herd as an apprentice. During that year he, with several King Island natives, while seal hunting were carried out to sea on an ice floe. They drifted around for nine days before they landed on Sledge Island. While on the ice they subsisted on raw seal. Nuluk has made no long trips, but is unusually bright and faithful. Nils Klemetsen, the Lapp herder, predicts that in time he will become a splendid deerman. He accompanied Mrs. Brevig to the States in 1903, and returned in 1904. One sister is dependent upon him. He is entitled to his deer in 1906.

OKITKON (Unalakleet). He was one of the first class of apprentices received in 1894 at Teller. In 1896 he was transferred to the herd at Golofnin, his home. He is especially expert with the lasso. Was one of the first Eskimos trusted to make a long freighting trip with deer. In 1897 he made a trip alone from Golofnin to Unalakleet and return, driving two deer, hauling a heavy load of supplies. Took charge of the herd at Golofnin in 1897. Is expert at making harness. He was married in 1896. Transferred to Eaton in 1901. In January, 1898, when Lieutenant Bertholf was en route with provisions for the Barrow relief expedition, he asked the Lapp in charge at Golofnin to give him

some sled deer. The Lapp said he could have them if Okitkon would take care of them, as he would trust him anywhere with reindeer. This is particularly striking, coming from a Lapp. In December of 1901, two prospectors started for the Buckland country with dogs, but finding that they could not make the trip on account of the impossibility of carrying enough dog food with them, were compelled to return to Eaton. There they engaged Okitkon, who with five deer took them and their freight to their destination successfully. In November, 1904, Okitkon made one of Mr. Johnson's company on the trip to Bethel. Doctor Lind says of them:

Okitkon is noted for his patience and thorough understanding of reindeer. Consequently he is one of the most successful drivers, trainers, and raisers of reindeer.

The size of his herd year by year has been as follows: 1898, 22; 1899, 26; 1900, 49; 1901, 51; 1902, 93; 1903, 148; 1904, 97; 1905, 88.

OOTENNA (Wales). Is about 28 years old. He began his apprenticeship at Teller in 1893. While at that station he gave evidence of faithfulness by staying with the herd overtime during a blizzard until he was relieved. He accompanied Mr. Lopp on the Barrow relief expedition. Besides supporting himself and wife, he assists his mother, stepfather, four stepbrothers, and sisters, three adopted sisters, and his wife's father and mother. Is temperate, honest, and trustworthy. Being of a mechanical turn of mind, he makes good sleds and harness. Owns a good house, chairs, sewing machine, washtubs, wringer, and graphophone, and is not in debt. The size of the herd year by year has been as follows: 1902, 192; 1903, 237; 1904, 98; 1905, 237.

OTPELLE (Kivalina). He was first employed as an apprentice in the Barrow herd (1898). In the fall of 1903 he and Electoona were sent to Kotzebue with 130 deer. However, they stopped with some natives at Cape Cavalino where they cared for the herd so poorly that many of the fawns died and 16 adult deer were killed for food. When the superintendent at Kotzebue learned of their location he sent a Lapp to bring them to the station, who found the herd in a very poor condition and the natives almost starved. They were furnished rations by the station. In the winter of 1904 and 1905 they were sent to Kivalina with a herd in which Otpelle owned 22 deer. His herd increased as follows: 1902, 20; 1903, 22; 1904, 34; 1905, 48.

PANEONEO (Wainwright). First an apprentice at Barrow in 1898. Sent to Wainwright in 1905. Is the best carpenter at the station on sleds and harness, and a fair herder. Has considerable mechanical ability and is the general utility man. The size of his herd has been as follows: 1902, 18; 1903, 25; 1904, 37; 1905, 52.

PANIGEO (Barrow). Probably adopted son of Toktuk, in partnership with whom he owned 55 deer in June, 1904. Is most energetic and always ready for extra duty. Entered herd 1902. About 17

years old. Can tell the ownership of a deer without looking at the mark. In 1905 he owned 14 deer; 1905, 14.

PENIN (Gambell). Apprentice at St. Lawrence Island. One of the original apprentices was discharged in 1901 and Penin was taken in his place. He came formerly from Indian Point, Siberia.

POWYUN (Barrow). Became an apprentice in 1900. Is unmarried. With Ahlook he took the first reindeer mail between Kotzebue and Barrow, overcoming obstacles that would have daunted many white men. Was about 20 years old in 1905. The size of his herd has been as follows: 1902, 12; 1903, 21; 1904, 34; 1905, 48.

SAGCONUK (Eaton). Is the son of one of Charlie Antisarlook's brothers, and entered their herd as an apprentice in 1900. Is about 21 years old. Was one of the expedition to Bethel, under Mr. Johnson, in November, 1904. During the spring of 1905 he was employed to pack the United States mail on reindeer back between Kaltag and Unalakleet. On the first trip, fearing that the Yukon Indians were going to attack him, he ran away from the deer and left the mail at Kaltag, thus causing much confusion; but since that time he has done very well. The size of the herd has been as follows: 1901, 15; 1902, 33; 1903, 46; 1904, 49; 1905, 44.

SEGAVAN (Barrow). Age about 33 (1905). Has a wife and two children. Is the most advanced in English of any of the herders, and keeps a creditable diary. He is a good, thoughtful herder, though slow. Entered the Barrow herd when it was established in 1898. His herd increased as follows: 1902, 18; 1903, 31; 1904, 45; 1905, 49.

SEKEOGLOOK (Teller). Was one of the first apprentices at Teller. Is about 33 years old. He became an independent herder in 1898, owning 59 deer. He married October 1, 1901, and his wife took a "native divorce" from him fifteen days later. In 1903 he traded some reindeer meat to a white man for whisky and got drunk and disorderly. He was fined and imprisoned. Sekeoglook is not a bright man and is easily led by others, but is honest. He has made several matrimonial ventures and is at present married to a widow with several children. His brother-in-law, rather a low character, is supported by him and has at times led him into wrongdoing. Sekeoglook has had the best success with deer of all the natives connected with the Teller station. The size of the herd year by year has been as follows: 1898, 59; 1899, 75; 1900, 75; 1901, 74; 1902, 68; 1903, 48; 1904, 75; 1905, 94.

SEPILLU (Gambell). Was engaged as an apprentice by Mr. Lerrigo in September, 1900. Doctor Gambell reported that he would become a good deer man. He is neat in person and keeps his things in order; is far more thoughtful than the average man of St. Lawrence Island and is a good writer. He keeps the log at that station. In addition to his other accomplishments, he makes good yeast bread. In June, 1904, his deer numbered 20.

SERAWLOOK (Teller). In 1901 and 1902 he made several long trips, one to Golofnin Bay and numerous shorter ones between stations. In the winter of 1903-1904 he carried the mail with reindeer between Teller and Marys Igloo and Wales, a total distance of about 3,300 miles, making 24 round trips. He always made good time, and on many trips exceeded the best time made by crack dog teams. One round trip was made three hours faster than the best dog team had ever made it. The success of the trips was a great surprise to the white people, who had ridiculed the idea of reindeer bringing the mail through on time or competing with dogs; also of putting it into the hands of a native.

Serawlook reads and writes fairly well. He is a good trainer and an excellent driver, not being quite so hard on his deer as some others, but probably able to make better time. He will be able to manage his own herd when it is loaned to him, but will have to be watched, as he is rather fond of bartering. All of his relatives died in the epidemic of 1900. The size of his herd year by year has been as follows: 1902, 11; 1903, 8; 1904, 7; 1905, 10.

SHOUDLA, (Wainwright). He inherited his deer from his father, Oyello, who was the first Eskimo to enter the reindeer business at Barrow, and who died in 1902. Shoudla is an excellent man with the deer, but is handicapped by a lame leg, which was broken and badly set while a child. In 1905 he was sent from Barrow to Wainwright with 55 deer. The size of his herd has been as follows; 1903, 55; 1904, 70; 1905, 79.

SOKWENA (Shishmaref). Began his apprenticeship at Teller in 1893. Is about 27 years old. During a blizzard in 1893 he left the herd with his companion Kivyearsuk while he fought his way through the storm to the station for food and assistance. He accompanied Mr. Lopp on the Barrow expedition. During the epidemic of 1900 he lost his wife and children. For two years he was an assistant in the mission work. He spends part of his time in hunting, but is a good deer man. Besides his immediate family he supports his wife's father and mother. In January, 1905, he was transferred to Shismaref. The size of his herd year by year has been as follows: 1902, 100; 1903, 117; 1904, 50; 1905, 119.

TAKTUK (Golofnin). Taken into the herd in 1897 as an apprentice. Is about 38 years old. He is tall, strong, and healthy. Is married and had one son in 1897. Considered a good driver. The increase of his herd is as follows: 1900, 13; 1901, 17; 1902, 27; 1903, 29; 1904, 39; 1905, 48.

TATPAN (Unalakleet). Tatpan was sent to Teller, January, 1894, to learn reindeer herding on the recommendation of Captain Healy and became one of Antsarlook's herders. Transferred to Golofnin in 1896; to Eaton in 1901. That year he assisted Ole Bahr to drive a

herd from Eaton to Nulato. Again in 1903 he assisted in driving a herd from Unalakleet to the Kuskokwim. While Doctor Lind was taking a herd to Bettles in 1904, Tatpan was left in full charge of the herds at Unalakleet. He is said to be rather impatient with young men. As he was one of the first Eskimos given deer, he now owns a large herd. The following figures show its growth year by year: 1898, 27; 1899, 75; 1900, 64; 1901, 53; 1902, 105; 1903, 108; 1904, 138; 1905, 129.

TAUTOOK (Golofnin). He began his training at Teller in 1893. Married the winter of 1905. He is an excellent hunter. In 1898 he became an independent herder. In the winter of 1896 and 1897 he transported Rev. A. Anderson from Teller to Nome with reindeer. This was the first time an Eskimo ever did real passenger transportation with deer. He went with Mr. Lopp to Barrow with the relief expedition. He is the sole survivor of a large family, most of his relatives dying in the epidemic of 1900. He is a good driver and trainer of deer, and the best manager of all the natives owning deer, and in this respect equals most of the Laplanders. Indeed, they often say about him: "He is like a Laplander." The growth of his herd is as follows: 1898, 77; 1899, 75; 1900, 75; 1901, 141; 1902, 143; 1903, 141; 1904, 172; 1905, 193.

TOKTUK. Began his apprenticeship at Barrow in 1898 when the herd was established. At present he is the head herder there. He is very well off. Independent of his reindeer business he has a number of natives trapping for him. In a few years he will be the "big man" in his district. He is married, and has one child and an adopted son. Excels in every line of reindeer work and can be depended on. The size of his herd year by year has been as follows: 1901, 17; 1902, 24; 1903, 38; 1904, 55; 1905, 53.

UNGAWISHEK (Barrow). Entered the herd in 1900. The small size of his herd is due to unusual losses of fawns and to the large proportion of male fawns born. Is married, but has no living children. During the epidemic of measles in 1902 he nearly succumbed, and as a result has never been strong since. Is about 30 years old. His herd has been as follows: 1902, 11; 1903, 21; 1904, 30; 1905, 29.

CURRENT REPORTS FROM SUPERINTENDENTS AND STATIONS.

In addition to the statistics reported from the reindeer stations which have been summarized and analyzed in the foregoing tables, the reports of the general superintendents and of the local superintendents in charge of the respective stations included in the appendix to this report afford many evidences of the excellent effects of the reindeer industry in improving the condition of the natives. Superintendent Lopp gives an account of 21 Eskimos, herders and apprentices, who "own 824 deer, who order their supplies direct from San Francisco,

thus avoiding a middleman's profit. They represent all the different factions or clans of the Cape village, and as far as their income allows are helping their needy relatives. They are better clothed, better fed, and live better and cleaner lives than in former years, and are helping their people along these same lines" (p. 60).

In the endeavor to establish new stations during the year an expedition from Unalakleet to Bettles, covering a distance of 550 miles and return, was made during the months of November and December, 1904, and January, 1905, under the charge of Carl O. Lind, M. D., supervisor of reindeer in Alaska, central division, formerly a medical missionary of the Swedish Evangelical Church and subsequently a teacher in Alaska in the employ of the United States Bureau of Education. His party consisted of eight men, including three Finns and three native herders, and it was due to the courage, endurance, and patience of these men that a herd of 300 reindeer was successfully driven through the "scrub" growth of the country in winter in the face of snowstorms and a temperature sometimes as low as -44° . The events of each day, such as breakages and delays, recorded in his diary at night, which would be regarded as trivial in an inhabited part of the country, in the solitudes of the wilderness were often of vital importance to the success and even the safety of the expedition.

It is noteworthy that the sled deer made the trip of nearly 550 miles back to Nulato, thus completing the total journey of over 1,000 miles. The form of Mr. Lind's record presents a more vivid picture of a journey in that sunless arctic region, in the midst of barren snowy wastes and intense cold, than a more formal pretentious report could give. It would also serve as a guide to any who hereafter may be obliged to traverse the same routes, and hence it is included in the appendix to this report (pp. 85-159).

A similar expedition, with 300 reindeer, to establish a second new central station, left the valley of the Kuskokwim River, near Bethel, on December 15, 1905, in charge of Hedley E. Redmyer.

Mr. Redmyer's party was composed of himself, three Finns, Messrs. Wuori, Lampela, Karimun, Peter Hatta (a Laplander), and an Eskimo apprentice boy, Henry.

It was originally intended to drive the herd to Copper Center, but Mr. Redmyer, failing to find the passes through the mountains between Bethel and Copper Center, changed his course southward through Cooks Inlet, with the intention of going around the southern edge of the range. Upon reaching Lake Iliamna and finding superior pasture ground, it was decided to establish a station on the south shore of the lake, accessible by a short portage to the salt water of Cooks Inlet. In addition to the favorable location of the new place, it had the advantage of completing a chain of reindeer settlements from the northernmost limit of arctic Alaska to tide water on the Pacific Ocean.

This trip of 500 miles through an unknown region, portions of which had never been traversed by white men, was successfully made, and the herd landed at Lake Iliamna safely and in good condition.

The summing up of Mr. Redmyer's trip is made in his letter of March 19, 1905, and published in the appendix, pages 160-163.

The success of the introduction of reindeer into Alaska has awakened an interest in Newfoundland, which has control of the coast region of Labrador.

In Labrador the same conditions exist as in Alaska, to wit, a scant supply of food for the Eskimos and an abundant supply of moss for the feeding of herds of domestic reindeer. The letters of the Hon. J. J. Woods, postmaster-general of Newfoundland, and of Dr. Wilfred T. Grenfell, superintendent Royal National Mission to Deep Sea Fishermen, indicate the growing interest in Newfoundland. (Appendix, p. 83.)

This report completes the series (15 in number) of annual reports on "The Introduction of Domestic Reindeer into Alaska."

The series commences with a preliminary report dated December 12, 1890, from the general agent of education in Alaska to the Commissioner of Education, and on December 26, 1890, transmitted by the Commissioner to the Secretary of the Interior.

TABLE 11.—*Expenditure for reindeer for Alaska, 1905.*

Salaries, 16 employees	\$9,716.67
Supplies for stations	5,567.03
Transfer of herds	2,382.96
Purchase of 220 deer, at \$25 per head	5,500.00
Freight	171.60
Traveling expenses	1,021.85
Printing report, etc	425.81
Total	24,785.92

See also Table 12, statistics, 1905.

Historical statement of expenditures of reindeer appropriations.

TELLER.

Year.	Supplies.	Salaries.	Freight.	Traveling expenses.	Transfer of herd.	Purchase of deer.	Total.
1894.	\$2,187.15	\$540.58	-----	-----	-----	-----	\$2,727.73
1895.	3,709.58	683.80	-----	-----	-----	-----	4,393.38
1896.	3,162.62	-----	\$1,450.71	\$100.00	-----	-----	4,713.33
1897.	3,335.99	2,982.20	912.70	200.00	-----	-----	7,430.89
1898.	43.00	-----	381.63	75.00	-----	-----	499.63
1899.	771.83	-----	-----	10.00	-----	-----	781.83
1900.	753.62	650.00	-----	-----	\$381.67	-----	1,785.29
1901.	37.50	1,778.50	375.78	-----	-----	-----	2,191.78
1902.	751.54	898.33	390.00	-----	-----	-----	2,039.87
1903.	1,952.84	-----	236.50	-----	-----	\$940.00	3,129.34
1904.	-----	1,400.00	-----	-----	-----	-----	1,400.00
1905.	70.00	250.00	-----	-----	-----	150.00	470.00

EATON.

1897.	\$373.96	-----	\$800.50	-----	-----	-----	\$1,174.46
1898.	-----	-----	251.25	-----	-----	-----	251.25
1899.	3,347.41	-----	-----	-----	-----	-----	3,347.41
1900.	4,568.66	\$5,127.31	395.00	\$87.00	-----	-----	10,177.97
1901.	317.03	2,707.55	685.51	150.00	-----	-----	3,860.09
1902.	1,432.63	200.00	269.00	73.20	-----	-----	1,974.83
1903.	1,418.50	978.04	-----	97.00	-----	\$263.40	2,756.94
1904.	181.19	500.00	-----	-----	-----	2,350.00	3,081.19
1905.	-----	-----	-----	-----	-----	2,825.00	2,825.00
1906.	-----	-----	-----	-----	\$300.00	-----	300.00

GAMBELL.

1899.	\$193.18	-----	-----	-----	-----	-----	\$193.18
1901.	1,677.62	\$2,443.00	\$1,049.72	\$150.00	-----	-----	5,320.34
1902.	1,357.36	561.70	705.33	-----	-----	-----	2,624.39
1903.	1,605.12	839.25	455.00	-----	-----	-----	2,899.37
1904.	2,440.52	3,274.29	682.06	522.30	-----	-----	6,919.17
1905.	888.72	1,100.00	-----	-----	-----	-----	1,988.72
1906.	2,136.53	600.00	629.88	-----	-----	-----	3,366.41

BARROW

1900.	\$1,360.86	-----	-----	-----	-----	-----	\$1,360.86
1901.	71.85	\$1,200.00	-----	-----	-----	-----	1,271.85
1902.	731.15	1,200.00	-----	-----	-----	-----	1,931.15
1903.	818.99	-----	-----	-----	-----	-----	818.99
1904.	855.35	1,500.00	-----	-----	-----	-----	2,355.35
1906.	927.31	-----	-----	-----	-----	-----	927.31

WALES.

1900.	\$29.90	-----	-----	-----	-----	\$1,170.00	\$1,170.00
1904.	-----	-----	-----	-----	-----	3,750.00	3,779.90
1906.	-----	-----	-----	-----	-----	1,975.00	1,975.00

ILIAMNA.

1904.	\$1,608.22	\$300.00	\$331.40	\$922.43	-----	-----	\$3,162.05
1905.	2,008.30	3,350.00	171.60	114.00	\$787.57	-----	6,431.47
1906.	2,509.48	800.00	162.00	-----	-----	-----	3,471.48

Historical statement of expenditures of reindeer appropriations—Continued.

BETTLES.

Year.	Supplies.	Salaries.	Freight.	Traveling expenses.	Transfer of herd.	Purchase of deer.	Total.
1904.....	\$157.90			\$45.24			\$203.14
1905.....	2,489.41	\$1,500.00		597.45	\$1,536.41		6,123.27
1906.....	1,488.88	300.00		641.20			2,430.08

DEERING.

1905.....		\$50.00			\$58.98		\$108.98
1906.....	\$458.38	100.00					558.38

KIVALINA.

1906.....		\$311.41					\$311.41
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KOSEREFSKY.

1906.....		\$500.00					\$500.00
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TANANA.

1906.....		\$500.00			\$1,220.29		\$1,720.29
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BETHEL.

1901.....		\$500.00					\$500.00
1902.....		1,000.00					1,000.00
1903.....		1,000.00					1,000.00
1904.....						\$525.00	525.00
1905.....						550.00	550.00

NULATO.

1901.....		\$333.33					\$333.33
1903.....		500.00			\$42.00		512.00
1904.....		500.00					500.00
1905.....		250.00					250.00

KOTZEBUE.

1902.....			\$113.13				\$113.13
1903.....		\$612.60					612.60
1905.....		110.60					110.60

MISCELLANEOUS EXPENDITURES.

	1894.	1895.	1896.	1897.	1898.	1899.
Barter goods	\$2,570.41	\$1,818.71	\$1,363.43	\$2,406.42	\$6,770.08	\$7,686.54
Coal for cutter	700.00	1,081.50	1,050.00			
Printing report, etc		150.00	364.34	267.22	335.01	489.91
Expenses Siberian purchasing station				589.85	4,840.57	
Miscellaneous supplies		50.80				
Total expended	5,998.14	7,491.39	7,491.10	11,868.84	12,497.14	12,498.87
Appropriation	6,000.00	7,500.00	7,500.00	12,000.00	12,500.00	12,500.00
Balance	1.86	5.61	8.90	131.16	2.86	1.13

Historical statement of expenditures of reindeer appropriations—Continued.

MISCELLANEOUS EXPENDITURES—Continued.

	1900.	1901.	1902.	1903.	1904.	1905.	1906.
Barter goods.....	\$2,341.72	\$126.57	.....	.....	.....	.....	.....
Coal for cutter.....	2,102.57	949.39	\$130.00	490.08	\$576.68	\$425.81	\$310.50
Printing report, etc.....	2.55	.....	.....	.....	.....	.....	.....
Siberian deer purchased for cash.....	2,625.00	.....	.....	4,510.72	.....	.....	.....
Lieutenant Bertholf's expedition.....	5,617.11	13,232.48	.....	.....	.....	.....	.....
Traveling expenses of superintendent.....	385.90	727.13	.....	.....	382.89	47.45	145.00
Salaries of superintendents.....	341.67	375.00	.....	.....	1,300.00	3,479.62	594.44
Educational expenses of apprentices.....	1,895.40	100.00	.....	.....	.....	.....	.....
Miscellaneous supplies.....	.....	281.89	13.00	.....	361.82	.....	25.50
Total expended.....	19,463.39	24,896.00	24,829.87	18,423.04	24,497.19	24,785.92	14,660.80
Appropriation.....	25,000.00	25,000.00	25,000.00	25,000.00	25,000.00	25,000.00	15,000.00
Balance.....	5,536.61	104.00	170.13	6,576.96	502.81	214.08	339.20

Deer purchased by the Government in Alaska since 1897.^a

Purchased from—	Date of purchase.	Station.	Number of deer.	Price per head.	Total cost.
W. T. Lopp.....	Aug. 24, 1899	Teller.....	43	\$30	\$1,290
J. P. West.....	Aug. 11, 1902	Eaton.....	6	25	150
Mary Antisarlook.....	Sept. 17, 1902	.....do.....	29	30	870
W. Kjellman.....	Sept. 20, 1902	Teller.....	7	20	140
Norwegian Evangelical Lutheran mission.....	June 27, 1903	.....do.....	20	25	500
Ablikak.....	.....do.....	.....do.....	12	25	300
Moravian mission.....	Feb. 28, 1904	Bethel.....	21	25	525
Keok ^b	May 3, 1904	Wales.....	37	25	925
Congregational mission.....	May 25, 1904	.....do.....	97	25	2,425
Swedish Evangelical mission.....	May 17, 1904	Unalakleet.....	94	25	2,350
Congregational mission	May 31, 1904	Wales.....	16	25	400
Do.....	Sept. 24, 1904	.....do.....	47	25	1,175
Do.....	Oct. 4, 1904	.....do.....	32	25	800
Ablikak.....	Jan. 12, 1905	Teller.....	6	25	150
Mary Andrewruk ^c	June 26, 1905	Unalakleet.....	25	25	625
Nallagoroak ^c.....	.....do.....	.....do.....	d1	35	35
Tatpan ^c.....	.....do.....	.....do.....	d2	35	70
Do ^c.....	.....do.....	.....do.....	5	25	125
Okitkon ^c.....	.....do.....	.....do.....	5	25	125
A. E. Karlson ^c	June 20, 1905	.....do.....	113	25	2,825
Moravian mission ^c	May 2, 1905	Bethel.....	22	25	550
Taktuk ^c	June 26, 1905	Golofnin.....	8	25	200
Total.....	.....	.....	618	.....	16,555

^a In 1902 the Russian Government prohibited the further exportation of reindeer from Siberia.^b Representing independent herders at Wales.^c Not yet paid for.

d Sled deer (trained for sled).

COOPERATION OF THE TREASURY DEPARTMENT.

As in former years, the Treasury Department has furnished transportation in Alaskan waters to Mr. William Hamilton, assistant agent of education in Alaska, and to other employees of the Bureau of Education in the discharge of their official duties, and carried the mail to isolated teachers.

For this assistance thanks are due to the Secretary of the Treasury, Capt. W. G. Ross, chief of Revenue-Cutter Service, Capt. Oscar L. Hamlet, commanding, and other officers attached to the revenue cutter *Bear*.

In this connection I thankfully recall that but for the assistance of the Revenue-Cutter Service of the Treasury Department in the early nineties the Bureau of Education would have been unable to commence the reindeer enterprise for the want of transportation, being without means with which to charter commercial vessels for the purpose of transporting the reindeer from Siberia to Alaska.

For this cooperation credit is due not only to the Secretary of the Treasury and chief of the Revenue-Cutter Service, in Washington, but also to Capts. M. A. Healy, Francis Tuttle, and O. C. Hamlet, in command of the cutters *Bear* and *Thetis*, and to the officers and men under them.

All of which, with accompanying papers, maps, and illustrations, is respectfully submitted.

SHELDON JACKSON,
General Agent of Education for Alaska.

The COMMISSIONER OF EDUCATION.

No. 1.



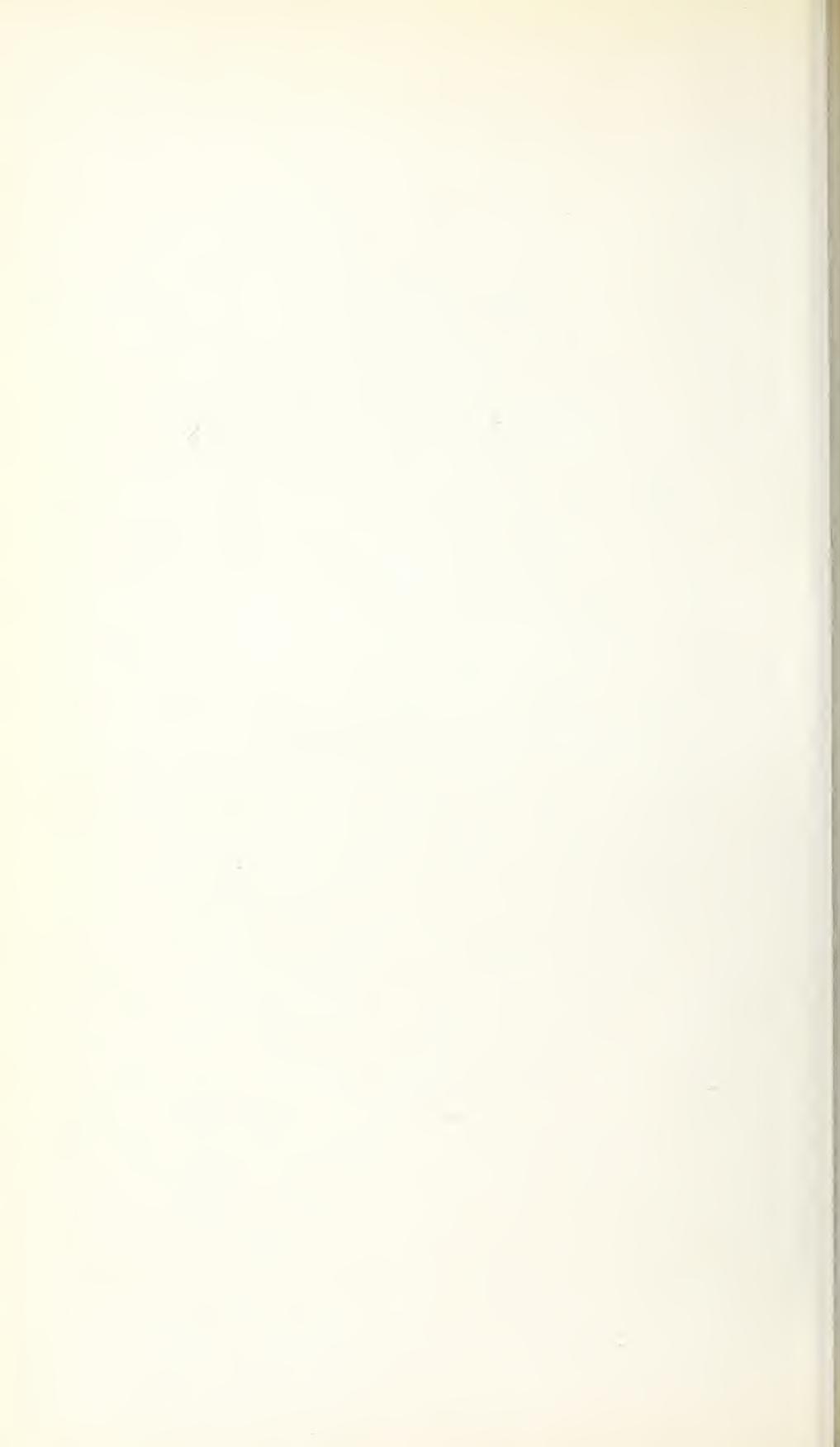
RIGHT REV. INNOCENT PUTINSKY, BISHOP OF RUSSIAN ORTHODOX CHURCH IN ALASKA.



No. 2.



REV. AND MRS. JOHN H. KILBUCK. WAINWRIGHT.
Photograph by Martin.



No. 3.



SERAWLOOK, ESKIMO MAIL CARRIER, WALES TO TELLER.

No. 4.



ESKIMO HERDER'S TENT, SIBERIAN PATTERN. WALES.

Photographs by A. N. Evans.

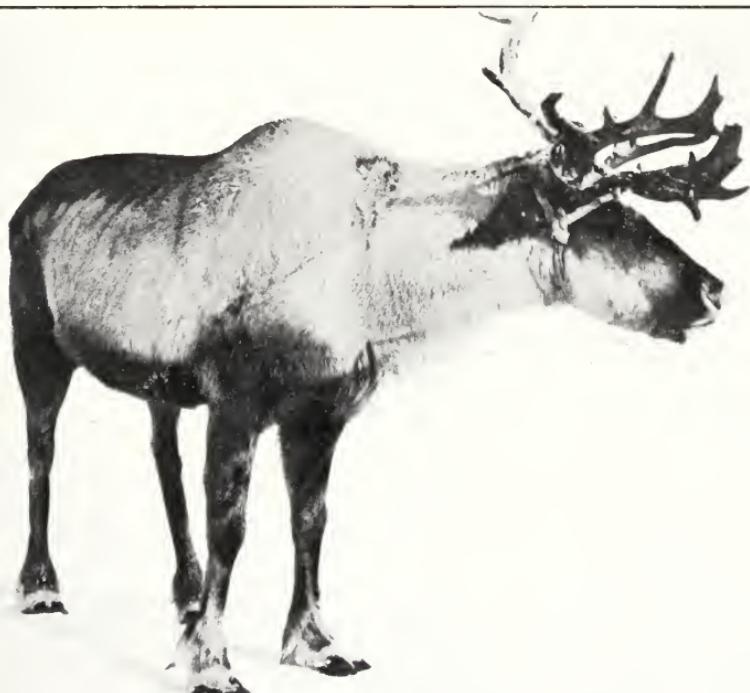


No. 5.



REINDEER FREIGHTERS AT WALES.

No. 6.



REINDEER AT WALES.

Photographs by A. N. Evans.



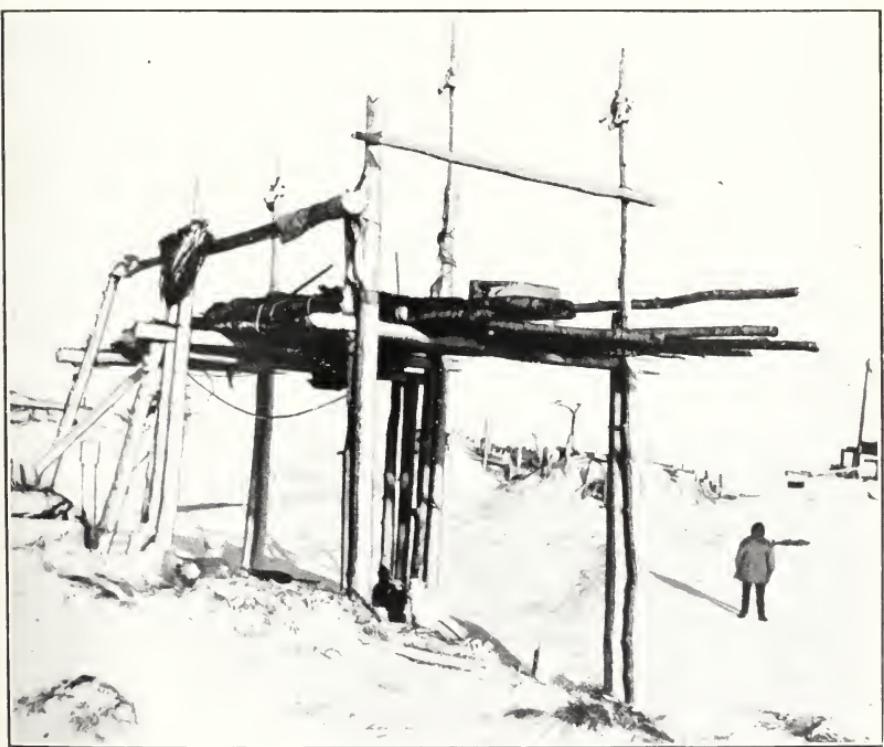
No. 7.



A PILE OF EELS CAUGHT THROUGH THE ICE ON THE YUKON RIVER AT IKOGMUTE, 1905.

Photograph by F. F. Fellows.

No. 8.



PROVISION PLATFORM. WALES.

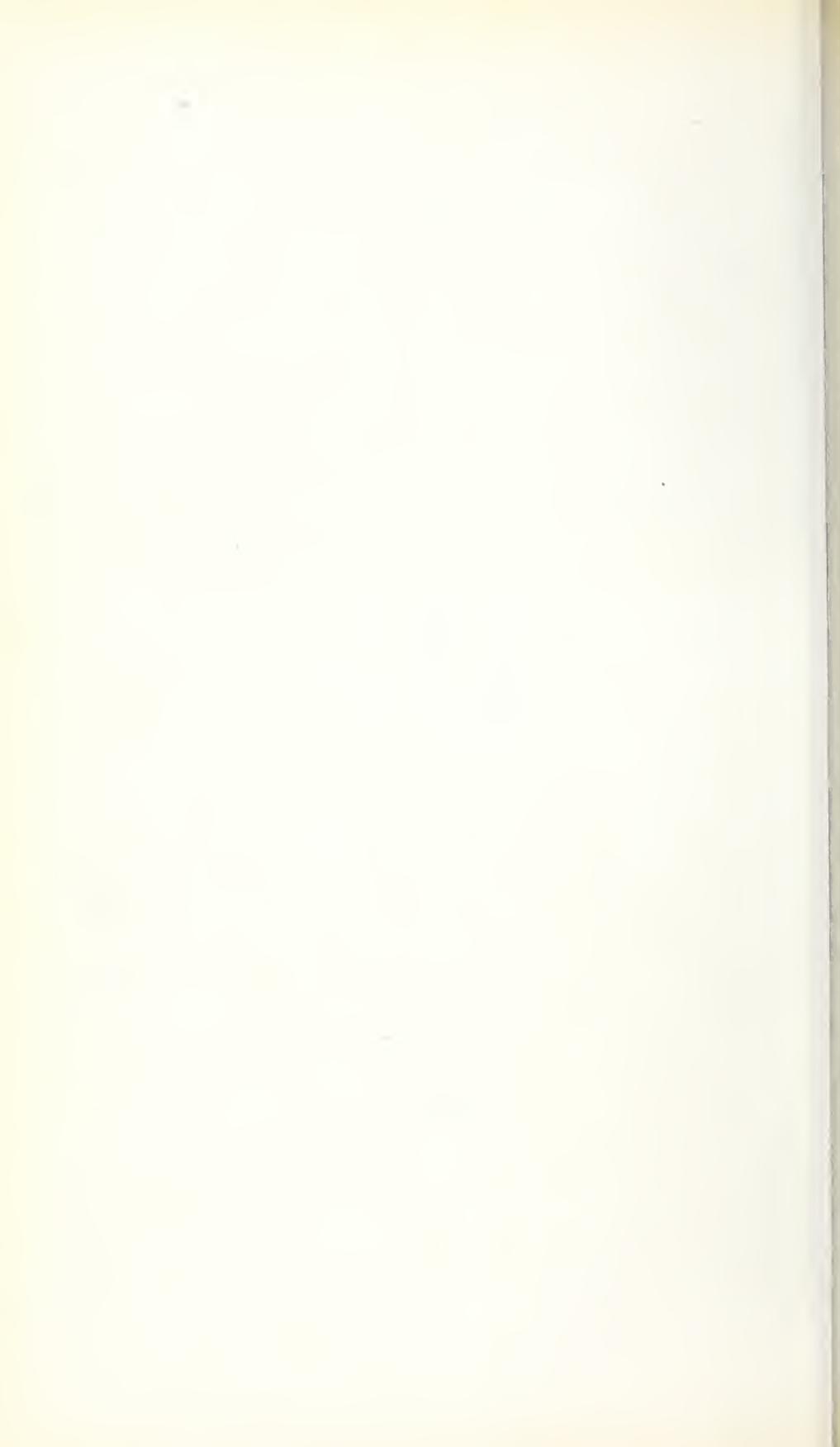
Photograph by A. N. Evans.





GOVERNMENT SCHOOL BUILDING AND TEACHER'S RESIDENCE AT WALES, BERING STRAIT, ALASKA.

Photograph by H. M. Hosack.



No. 10.



No. 11.

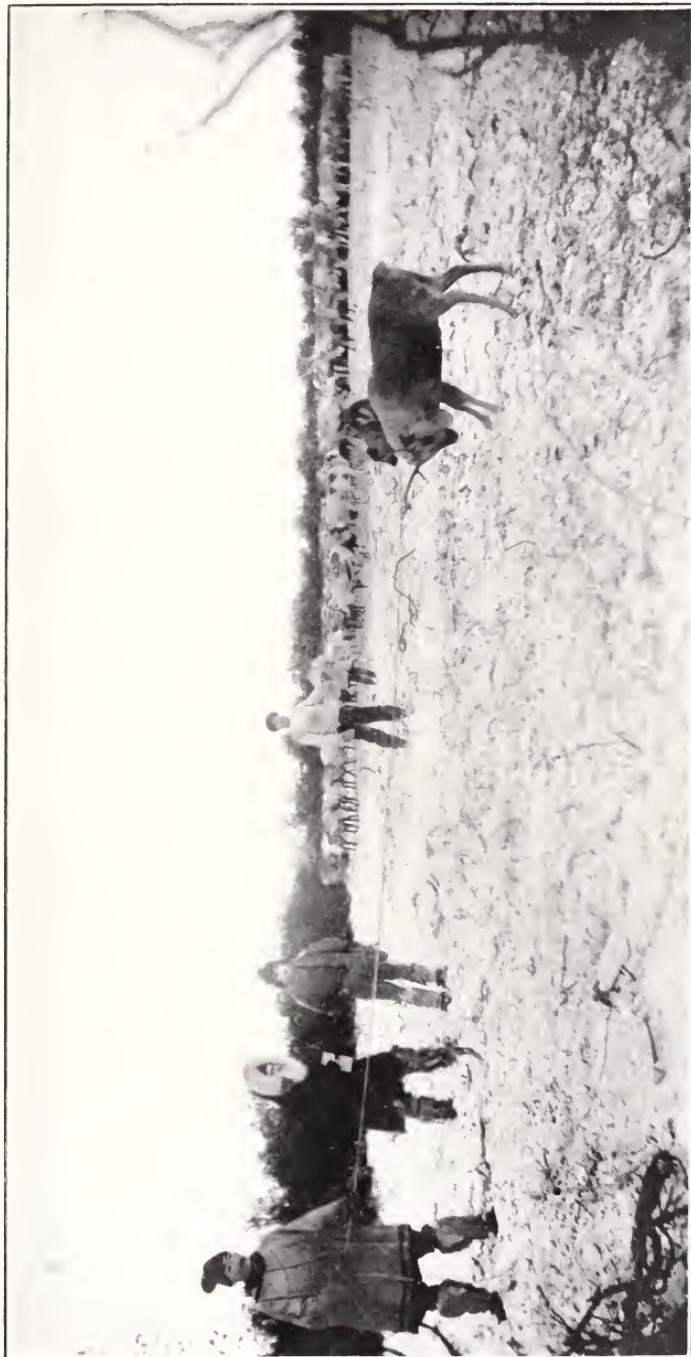


GROUPS OF SCHOOL CHILDREN. WALES.

Photographs by A. N. Evans.



NO. 12.



PART OF TELLER REINDEER HERD IN LARGE WILLOW CORRAL, TELLER.

Photograph by Wm. Hamilton, Ph. D.



No. 13.



REINDEER CARRYING THE MAIL (FROM 40 TO 60 POUNDS EACH).
UNALAKLEET.

No. 14.



MARY ANDREWUK PACKING PROVISIONS ON HER REINDEER. UNALAKLEET.

No. 15.



THE NORTHERNMOST SCHOOLHOUSE IN AMERICA. BARROW.

No. 16.



THE NORTHERNMOST POST-OFFICE IN AMERICA. PRESBYTERIAN MISSION. BARROW.

Photographs by Wm. Hamilton, Ph. D.



No. 17.



GOVERNMENT SCHOOL BUILDING AND TEACHER'S RESIDENCE. WAINWRIGHT.

No. 18.



SUPPLY SCHOONER LAURA MADSEN, FAST IN THE ICE AT BARROW, SEPTEMBER, 1904;
ONE YEAR LATER, IN THE FALL OF 1905, SHE WAS CRUSHED IN THE ICE AT THE
SAME PLACE.

Photographs by Wm. Hamilton, Ph. D.

No. 19.



ONE END OF GOVERNMENT SCHOOLHOUSE, WITH GROUP OF PUPILS. KIVALINA.

No. 20.



REINDEER HERDERS AND FAMILIES NEAR POINT HOPE, ALASKA.

Photographs by Wm. Hamilton, Ph. D.



No. 21.



SCHOOLHOUSE AND TEACHER'S RESIDENCE. KIVALINA.

No. 22.

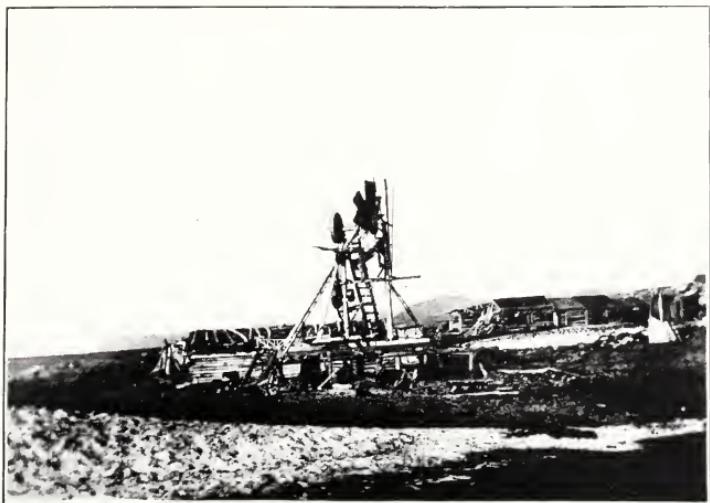


SINGING AT THANKSGIVING SERVICE BY THE GOVERNMENT SCHOOL.
AFOGNAK.

Photographs by Wm. Hamilton, Ph. D.

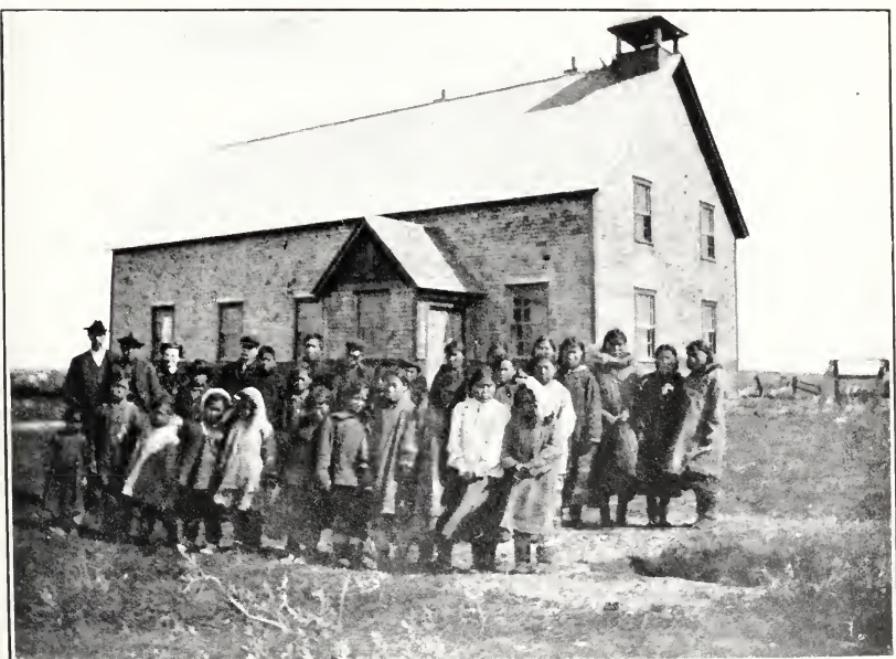


No. 23.



AN IMPROVISED SAWMILL WITH WIND POWER. UNALAKLEET.

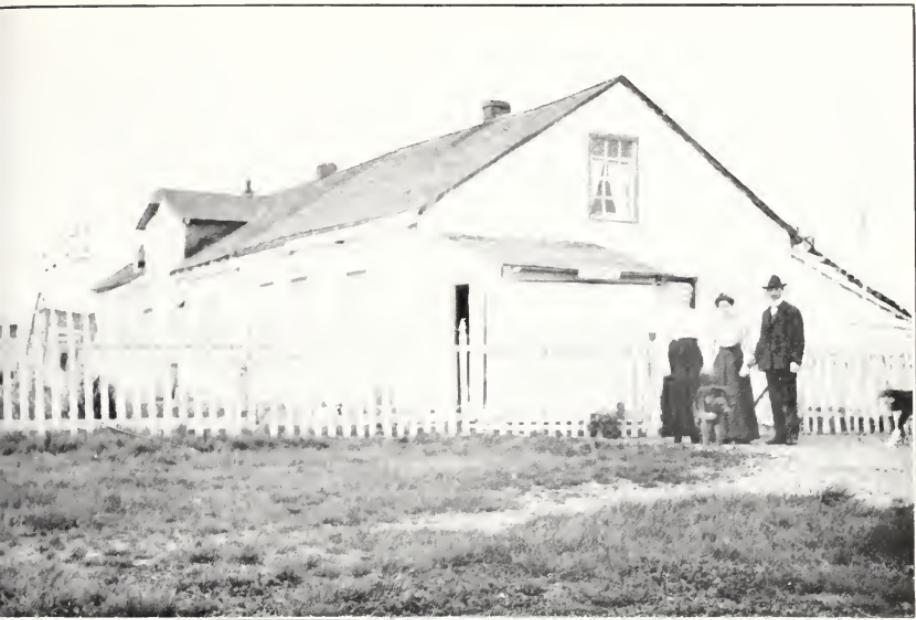
No. 24.



GOVERNMENT SCHOOLHOUSE, TEACHER'S RESIDENCE, AND GROUP OF PUPILS. KOTZEBUE.



No. 25.



SWEDISH MISSION HOUSE. UNALAKLEET.

No. 26.



GOVERNMENT SCHOOLHOUSE. UNALAKLEET.

Photographs by Wm. Hamilton, Ph. D.

No. 27.



ESKIMO HERDERS' FAMILIES. UNALAKLEET.

No. 28.



ESKIMO APPRENTICES SKINNING DEER. UNALAKLEET.

Photographs by Wm. Hamilton, Ph. D.



No. 29.



ESKIMO REINDEER HERDERS. KOTZEBUE.

No. 30.



PUBLIC SCHOOL, AFOGNAK. MISS BREECE, TEACHER.

Photograph by Wm. Hamilton, Ph. D.

No. 31.



GROUP OF PUBLIC SCHOOL CHILDREN. ST. MICHAEL.

Photograph by Franklin Moses.





PART OF AFTERNOON CLASS AT PUBLIC SCHOOL. ST. MICHAEL.

Photograph by Franklin Moses.





DINNER GIVEN TO PUPILS OF PUBLIC SCHOOL AT CLOSE OF TERM FOR REGULAR ATTENDANCE. ST. MICHAEL.

Photograph by Franklin Moses.





ESKIMO PUPILS, PUBLIC SCHOOL, UNALAKLEET.

Photograph by Franklin Moses.





THLINGET CANOE, SOUTHEASTERN ALASKA.



INDUSTRIAL SCHOOL, SITKA.





ANCIENT TOTEMS. KASAAN.

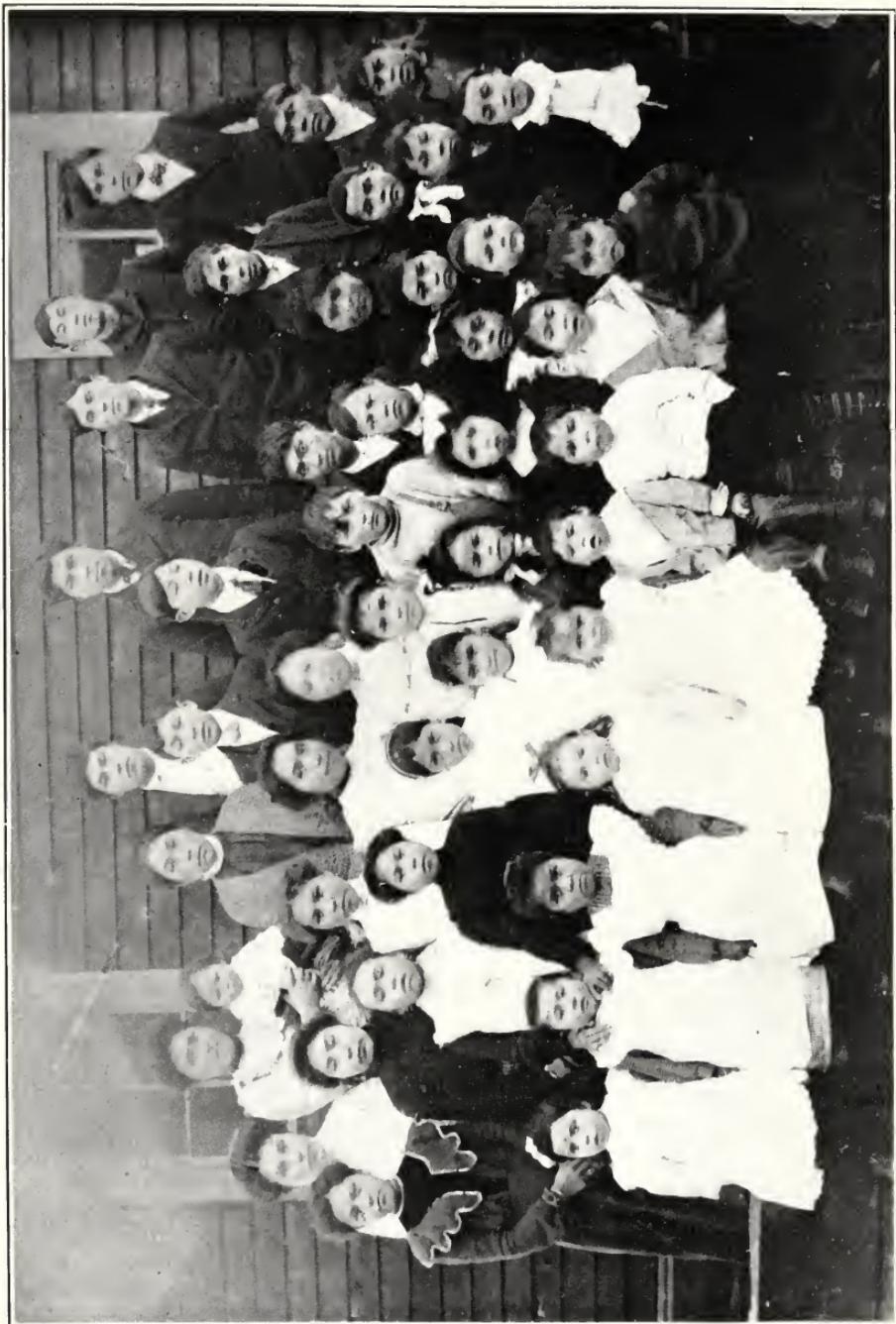
Photograph by H. W. Spear, R. C. S.



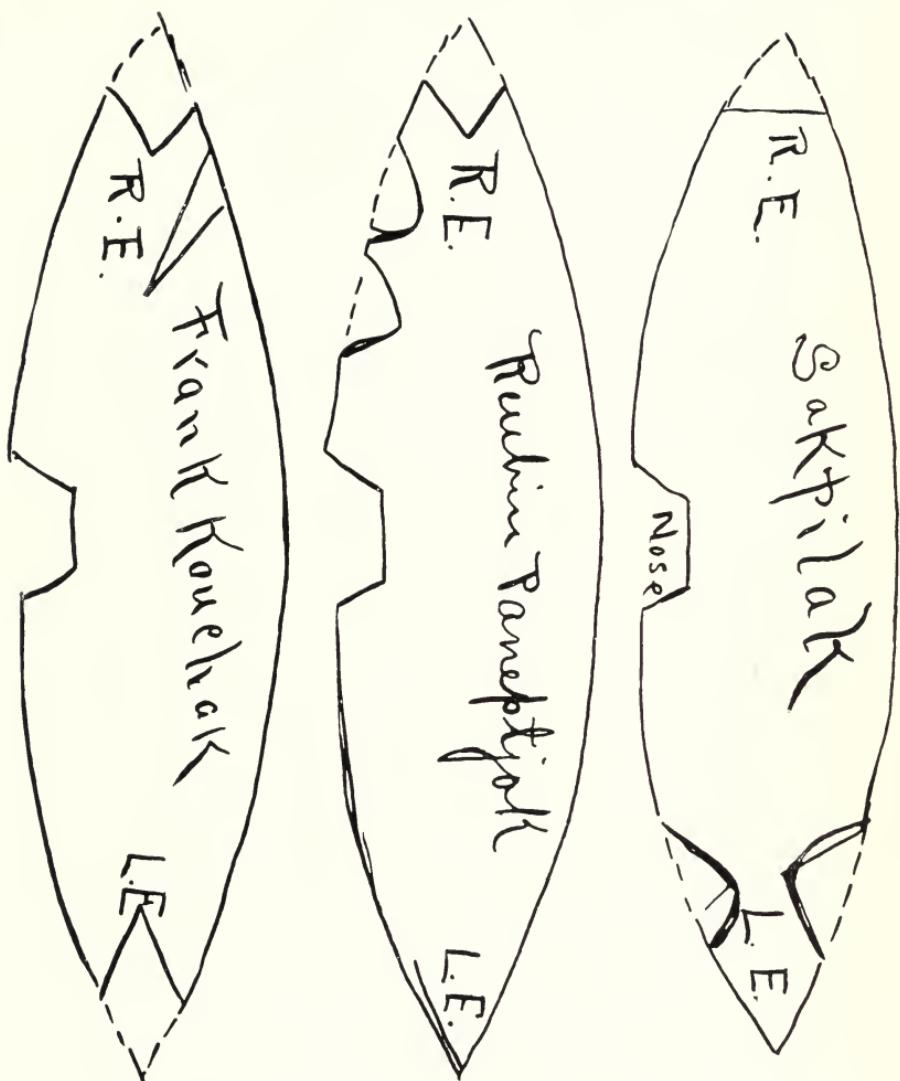


HYDAH CORNET BAND, KASAAN,
Photograph by H. W. Spear, R. C. S.

NO. 39.



HYDAH CHILDREN, PUBLIC SCHOOL, KLINQUAN.



APPENDIX.

REPORT OF C. O. LIND, M. D., SUPERINTENDENT OF REINDEER
HERDS, CENTRAL DISTRICT, ALASKA.

UNALAKLEET, ALASKA, *June 30, 1905.*

SIR: I have the honor to transmit herewith the annual report of the progress of the reindeer industry in Alaska, central division, for the year expiring to-day.

The first quarter of the year passed with the ordinary sameness of things. The balance of the year has been rather busy, especially at this station. Both the herds at Unalakleet have been doing well, as usual, when we except the disadvantages to which they have been subjected in the repeated corralling and lassoing. Considering the great number of deer in both these herds, the cases of disease and the number of accidents among them have only been few. On August 6 I met Mr. Hamilton, the assistant agent of education in Alaska, in St. Michael for the purpose of receiving orders and report in general upon the condition of the work.

During the second week of August the first cases of hoof rot developed, and at once two sick deer were taken home for study. On September 9 five other sick deer were likewise taken home and all placed in a cabin, so as to be safe from dogs. On the 10th they were all operated upon, and without exception they all improved quite markedly under treatment, so out of the seven only one succumbed to the disease. In the one deer which died the disease was too far advanced, so, although a local improvement ensued, it was impossible to prevent the general spread of the disease to the internal organs.

The treatment consisted in a free incision into the swollen parts and in evacuation of all the pus—i. e., where the pathological process had already gone on to breaking down of the tissues. In other cases not so far advanced the swellings were also incised, and in all cases a carbolic-acid lotion of 1 in 40 was employed for washing the wounds, which afterwards were dressed with a mixture of tar, 2 parts, and deer tallow, 1 part, boiled together.

Some chemicals and nutritive media, by means of which I should have studied the disease, arrived four days after the treatment of the last five deer was started. Because of limited space in which to keep the sick ones, as well as by reason of much work, I could not successfully do any special research work. And even if time were given, it is pretty difficult to do the work satisfactorily without a

fairly well-equipped laboratory, or at least a room where one can have the working material undisturbed. It is true, as Doctor Gamble reported, that the disease originates in the bones and cartilages near the articulations. I could not, however, with my limited time and means, demonstrate any micro-organisms in the swellings before they—the swellings—began to break down. In the few subjects under observation I found that there was invariably some small excoriation upon the skin over the swelling before it began to break down, and after that the pus-producing germs were found in abundance.

Some reindeer have died from meningitis. One sled deer had been injured around the horns with the halter, and an infection had there begun and traveled along the roots and gained entrance to the meninges. One such case occurred from an infection in the ear and another through the nose. The avenues of infection were easily traced by the destruction of tissues and collections of pus along the way.

During the winter a few deer have died from diseases of the heart, liver, and lungs, and some have died from accidents. The fawning season this spring was marked with the best of weather, except the last week of April, when we had a rather severe snow storm; and during that storm several fawns froze and others drowned in small pools and creeks. Had not that storm come just then, when most of the fawns were being born, I think the mortality among them would have been exceptionally low.

In view of the fact that two herds were to be driven from Unalakleet—one to Kuskokwim and one to Koyukuk—during the winter, I had to make a trip to Nome in August to secure the services of a man whom I could intrust with the care of one of said expeditions.

J. M. Johnson Losvar was found willing to go either to Bettles or Bethel, according to the needs, provided he were given employment for the year at \$50 per month and ration for himself and family. Johnson arrived at Unalakleet and reported for duty on September 29. Marelius Jensen, Charles Raisanen, and Adolph Sara, the three men employed by you to accompany and care for the Bettles herd, arrived at St. Michael on September 24, but were obliged to remain there until the 28th, in the evening, when a schooner from Unalakleet was able to reach there for the purpose of bringing them to their destination. During the night of September 30 they arrived at Unalakleet. October 2 two Eskimo boys, employed by the Northern Commercial Company's agent at Bettles as guides for the Bettles expedition, arrived also at Unalakleet.

According to instructions received, the Finlanders and Mr. Johnson were at once set to work preparing for our long journeys. Sleeping bags and skin clothing of various kinds were sewed; sleds, harness, etc., were repaired, and some new harness and halters were made. The guides were at once rationed and fitted out with all necessaries and

sent to the herd so as to, in some measure, familiarize themselves with the work before we started on the journey.

On October 25 the separation of the Bettles herd began, and after that the Finlanders took care of it until we departed. Because of too weak ice, we could not bring in Bahr's herd to the corrals, but had to make a new corral, north of Agowik River, and there we finished the count of Bettles and Bethel herds, both on November 7. That same evening the Bettles herd was driven north along the coast to be kept a sufficiently safe distance away from the original herd for the deer not to mingle, and the Bethel herd traveled southward to continue across Unalakleet River and there wait while the final preparations of the herders were being made.

November 10, in the forenoon, Mr. Bahr and I left Unalakleet, and in the morning of the 12th we joined the Finns and the Bettles guides with the herd and proceeded toward the north.

Bettles was reached in the evening of December 31, with the men and herd in a good condition, but all of us were extremely tired. Because of the poor sleighing and timbered country through which we had to cut our way, and the difficulties in finding the moss, the trip took a week and a half more of our time than for what we had prepared. The return trip of Bahr, Koktoak, and myself was begun January 6, and on February 21 we arrived safe and sound at Unalakleet.

J. M. Johnson, the chief of the Kuskokwim expedition, with his four Eskimo companions, left Unalakleet with the herd on November 12. On December 20 they arrived at Bethel, also in a good condition; and on January 23 they reached Unalakleet, having successfully accomplished their task.

During the early part of December a herd of 300 reindeer was started from Bethel, Kuskokwim, on its way to Copper Center; and during my absence north another herd was received at this station from Teller. The latter was kept separately at South River station until we returned, and then it was counted, and from it I paid back the numbers borrowed in the fall from the different herders, to complete the two herds started from Unalakleet.

The Golofnin herd is reported to be in a very good condition, as usual. Mr. Johnson states that the Kuskokwim reindeer station excels every reindeer station he has yet seen, and that that herd was also in a most excellent condition. The two herds at Unalakleet have also done very well the past year. After the discharge of Mr. Bals, Nallgoroak, an Eskimo, had the responsibility of that same herd, and he did well.

One thing, however, which is difficult for an Eskimo, is to count the deer. When the herds become as large as either one of these the Eskimo can not very well keep track of them yet. After Johnson's

return from the Kuskokwim he has had the charge of that same herd which Bals and Nallogoroak had before.

Nulato reindeer station is the only one which does not do as well as it might be expected to do. After four years' loan of that herd, there is not one apprentice who owns a single reindeer. The feeding ground on which the herd was kept during the winter was rather poor. It was among the timber where the snow lay several feet deep, so, naturally, the deer were poor. Another fact which keeps the Nulato herd from being in the best condition is the shortage of male deer.

Having been home so little the past winter I have been able to do nothing in the line of freighting until this spring, when I made arrangements with Mr. A. R. Corbusier, Northern Commercial Company's mail agent, to use reindeer for packing the mail over the portage from Kaltag to Unalakleet, a distance of 82 miles. Two round trips were made and the reindeer proved to be perfectly satisfactory. The last overland mail was 400 pounds and 10 deer carried it nicely over a trail on which most of the way the animals sank to their knees in mud and water. In crossing the streams—there are many—the reindeer jump right into the water and swim across without any trouble at all. As for the smaller creeks, which could be spanned with logs, the deer carried its pack and walked across them on three round logs just as surely as any man could. It is very probable that after this, reindeer will be used exclusively on the Tanana and St. Michael route.

All the deer which once bore Moses's brand have now, according to instructions, been marked for the Government. Likewise have all the fawns born to the Episcopalian herd been marked for the Government. The 25 deer due to the Government from Mary's herd, for the care, have been marked, together with 25 others which I bought from her for the Government. All the deer—117 in number—by which the herders have paid for their provisions for the year just closing, and 5 females from Tatpan and Ogitkon each, which I have bought, have been marked for the Government in my presence.

For the Bettles trip we had borrowed two sled deer from Tatpan, which should have been returned, but as they were not in a condition to return, they were left at Bettles, and I allowed Tatpan \$35 per head for the two deer. Accebuk and Koktoak had likewise one sled deer each left at Bettles for similar reason, and they are given other unbroken males in return from the Government herd. Nallogoroak had one of his sled deer left at Kuskokwim and I allowed him \$35 for it on his account for next year.

The Eaton buildings I find it impossible to keep in order unless there be people living there. Last winter travelers were so bad that they even broke down boards from the walls. They pulled out the staples in the doors and prepared their entrance when they could not get the

locks open. The few old things yet remaining in the store had been disappearing fast while I was away. Especially is this true of the old skins, blankets, etc.

This spring I have moved everything away from there, so that there shall be nothing for anybody to search for. Even the stoves I found it safest to take down. One of the small cabins, with a good stove in it, I left open, in which travelers can stop in case of need. All the other houses I locked and nailed up securely, both doors and windows. The roof on the storehouse was never finished, but there is nearly 4 feet along the top, on both sides, which was covered with manila paper only, and by this time the storms have torn it almost all away. A few window panes have also been broken in both the main building and the cabin, but otherwise all the houses are in fairly good repair. The Government cabins at Unalakleet are also in a pretty fair condition except the roofs, which would need new tar paper if they should be made waterproof. Since all the articles were taken down from Eaton they are both used as storerooms.

Constantine, a herder from Golofnin, was on a visit to the States, and there he died from pulmonary tuberculosis last fall. Constantine has two brothers at Golofnin, but only one, John, cares for herding. John, with his family, moved to the herd last fall, and he has been doing well at his new work. The health has generally been good among the herders the past year.

On the coast we have been much disturbed by fires this spring. Not less than three different times have we been out from this village fighting the flames. Worst of all was a fire which started opposite St. Michael, on the mainland, and burned for many days and ravaged the country for many miles northeast of St. Michael and as far south as to the Yukon timber and many miles in among the hills. Because of the fact that there are no available funds by which to defray such expenses, nothing could be done to check the fire. It had to burn unhindered until a big snowstorm came and put an end to the destructive element. By said fire the traveling with reindeer over the customary route to Kuskokwim is now made impossible.

I beg leave to suggest the following:

1. That the Eaton buildings be sold for removal if a reasonable price can be obtained, because where they are at present they are of no use or benefit to anybody, and if no one is permanently living there they will soon be worth very little or nothing.

2. That Frank Koutchak Avogook, Sakpilak, Ogitkon, and Moses Koutchak be given a loan from the Government of 10 female deer each for five years. As you will see in their biographical sketches, they have all been with the herds long enough to have proven themselves both able and trustworthy herders, and yet they have so few deer. Some of them are rather prone to discouragements, but I am sure that a few

more female reindeer would tend to better their condition. I would also suggest that Koktoak, Sagoonuk, and Angolook each be given a loan of 5 females each for five years, that they may be able to get a better start. In all, it would take only 65 female reindeer, and yet such a small number would very materially help these men to a good self-supporting basis.

3. I would also propose that a herd of reindeer be placed on the portage between Kikektarik and Anvik Mission, near as possible to the latter place. I understand that Rev. Mr. Chapman, the missionary in charge, will have no time and no responsibility for the care of a herd; but if a loan be given to some experienced herder and he be stationed there to train the natives, then I think arrangements could be made with Rev. Mr. Chapman to issue the herders provision.

4. Mr. Stecker, the missionary in charge at Bethel, has also inquired if it is possible for him to get another loan of deer for their mission station on the coast. I think it would be well to have a herd even there, if there be suitable feeding ground, and suggest that a reindeer station be established there next winter.

The work is steadily advancing, and each year's experiences go to prove the practicability of extending the natives of Alaska a helping hand on the original and continued plan of Dr. Sheldon Jackson.

Respectfully submitted.

C. O. LIND, M. D.,
Supervisor of Reindeer.

Dr. SHELDON JACKSON,

U. S. General Agent of Education in Alaska.

REPORT OF W. T. LOPP, SUPERINTENDENT OF REINDEER HERDS AND SCHOOLS, NORTHWEST DISTRICT, ALASKA.

UNIVERSITY STATION,
Seattle, Wash., October 28, 1905.

DEAR SIR: Supplemental to the numerous letters I have sent you from time to time, I hereby submit to you a brief report of my itinerary since October 11, 1904, the date of my last report.

The Wales building was completed and the native carpenters paid off October 12. The carpenter, Mr. Alseth, and his assistant, Mr. Finley, had been sent to St. Michael September 9, leaving this house far from completion. The natives did very creditable work. When Mr. Evans, the teacher, moved into the building, he gave the people a reception, or "housewarming," which was well attended. Songs were sung and refreshments served, making it an enjoyable occasion. Several of the Eskimos made appropriate speeches. One seemed to voice the sentiment of the people in saying that the "beautiful building" would always be an ornament to their village.

Receiving word from Teller that a miner threatened to bring suit against two of the herders for killing his dogs, and that a school was needed in the town, I went down in an oomiak (skin boat) October 28-29. Finding a school population, desks, books, etc., there, and the citizens anxious for a school, I went to Nome and wired you for instructions. Anticipating that your reply would be favorable, I made inquiries for a teacher, and appointed a school committee consisting of Marshal Evans, Rev. Mr. Hosack, and T. M. Gibson, instructing them to select a teacher and complete the arrangements for opening the school as soon as they should receive your reply. Receiving this the following week when at Nome, they appointed Mr. Orbell and brought him to Teller on their dog sleds so that the school could be opened without further delay.

After hearing the herders' statements concerning the shooting of the miner's dogs I advised Mr. Larson, the teacher in charge, to settle for the dogs out of court. The subapprentices who shot the dogs were between them and the herds, a position to drive them away without shooting them. They had been instructed by Mr. Brevig to shoot dogs only in case a deer's life was in immediate danger. At the time of the shooting the herd was kept at Bering and the herders were living in the deserted houses of that defunct town. Being only 5 or 6 miles from Teller, the herd in feeding often wandered in sight of Teller, and when the wind was favorable could be scented by the numerous dogs in that town. The dogs in question had been raised in Bering, and the herders at the time of shooting were occupying a house belonging to the owner of the dogs. So it was not strange that the young dogs and mother should make frequent trips to it during the idle summer months.

- The fact that none of the older and more experienced herders took part in the shooting showed that they did not consider that the safety of the herd depended on the killing of the dogs. Mr. Larson brought about a settlement by having the herders give the miner two old sled deer. This miner is no longer a "dog man," but is now a pronounced "deer man." He succeeded in teaching his deer to eat oats and used them all winter long in hauling supplies to the Sawtooth Mountains, where he and his partner were prospecting.

If the owners of deer and dogs use due precaution there is little cause for apprehension. The dogs are becoming more and more accustomed to the deer every year. During the winter I witnessed sled deer tied to hitching posts in the streets of Teller hours at a time, unguarded, and none of the numerous "malemutes" offering to attack them.

After receiving your delayed letter instructing me to take the herd to Bettles in case I could communicate with the Eaton station in time

to arrange for a change of plan, I returned to Teller and sent messages to Nome to be telegraphed to the Bureau and Eaton. In case the Bettles herd had not already started from Eaton, I had hoped to have it start from Kotzebue instead.

While awaiting these replies with regard to change of plans we built two willow corrals near Teller and separated 289 Government deer from the main herd. According to your instructions, I was to have accompanied this herd to Eaton in January. I considered it unwise to lasso and handle does so late in the season. By separating them from the main herd at that time (November) they were ready to be driven either north or south when the answer to our telegrams arrived.

After hearing from Eaton that the Bettles herd had already started, I arranged to send the Teller herd to Eaton by Frederick Larson, Doonak, and Sekeoglook. Sleds and sled deer were furnished for the trip by Doonak and Sekeoglook. They themselves did not accompany the herd, but sent their subapprentices, Noonasilook and Oblawilook, to assist Frederick. On the first day out they found that the Lapp dogs required more assistance than they had expected, so they employed a young man by the name of Kafeenuk to make the trip with them. They made very good time, reaching their destination in twenty days, December 16 to January 5. On the round trip they were out forty-seven days, December 16 to February 1.

On my trip to Nome I spent one night at the Eskimo village at Quartz Creek. This has been generally known as the Quartz Creek mission. A Government school has been taught here in a road house purchased for a mission through the liberality of the Reverend Hultberg. The natives own and live in their own houses and support themselves. These people complained that some of the "pick-up" teachers, or missionaries, sent them had been far from satisfactory, and asked that permanent ones be sent. Some of them thought that Synrok was a better place for their village.

While there a young man by the name of Kuginok complained that he had served a five years' apprenticeship as herder for Charley Antisarlook, but had not received any of the deer he had been promised. He explained that Charley had died about the time that the deer were to have been given him, and subsequently Charley's widow refused to give him the deer. Frederick Larson and all the natives of whom I inquired corroborated Kuginok's statement. They said that when all the natives and herders were stricken down with the terrible epidemic in 1900 it was due to this young man's faithful efforts that Charley's herd was not scattered and lost. I assured him that the Bureau would look into the matter and see that he received what belonged to him.

Before leaving Teller I received your telegram authorizing the establishment of a herd at Deering, with two Cape natives in charge.

Returning to Wales December 11, I arranged with Keok and Karmun to take their deer along and take charge of the new herd. One hundred and ninety miles was a long, cold trip for Keok's wife and bottle-fed babe. We prepared a covered sled, which gave them some protection against the winds and blizzards, but at the expense of being tipped over several times. After finishing our preparations at Wales we went to the herd, which was 40 miles away, on the Noolook River. Here we had several delays or hindrances in separating deer. The enlarging of the willow corral and a series of stormy days delayed our start until January 2. In five days we reached the southwest part of Kotzebue Sound, known as Good Hope Bay. Here, within sight of Deering, we encountered a severe blizzard, followed by a southerly gale and rain. A high tide covered the ice of the bay with slush and water varying from 12 to 30 inches. The little rivers flowing into the sound were flooded.

We had to put our loaded sleds on top of an empty one to get them across dry. We had not thought it possible to have a change in temperature in the latitude of the Arctic Circle of 68 degrees—from 30 below zero to 38 above—in the month of January. When the wind changed the water subsided, leaving the ice on the bay so sleek that the deer could hardly stand. The rough "nigger head" tundra along the shore was left so bare of snow that it was almost impossible to haul the sleds over it. We reached Deering on the fifteenth day out. Had we left the Cape herd two days sooner we would have avoided the storm and reached our destination in seven days. We had an abundance of moss all along our route. "Dick," a collie dog, did splendid work on the trip. He was able to drive the herd at the rate of $4\frac{1}{2}$ miles an hour. The camp life seemed to agree with Keok's babe.

This new herd contained 365 deer—100 Government deer for the Deering mission and 265 belonging to the Cape herders. Mrs. Anna H. Foster, superintendent of the Friends' mission at Deering, signed the contracts for the loan.

I submitted the ration list for chief herders to the local merchants for estimates. Born Brothers being lower than the other bidder, we arranged with them to furnish a monthly ration to Keok, his wife, and Karmun for \$29.88.

Having completed all the arrangements necessary to the establishment of this herd, I drove across the sound to the Friend's mission at Kotzebue, a distance of 90 miles. Mrs. Thomas is the Government teacher at that mission. She was unwell at the time of my visit and her husband was teaching in the school. The new building built by the local carpenters and the natives under the supervision of Mr. Thomas was almost completed. After spending three days with Mr. and Mrs. Thomas I continued on to the herd and spent six days with

the herders. Their camp and herd was on the mainland between the mouths of the Nooatok and Kowak rivers, about 29 miles from the mission. In a cluster of spruce they had two comfortable log cabins. Alfred Nilima, the chief herder (Laplander) and his wife and babe occupied one of these, and three Eskimo apprentices (mission) the other. One of them was married. To camp in timber protected from the sweeping winds and blizzards was a new experience for us. We floored our tent with several layers of small spruce boughs, stretched our reindeer sleeping bags on them, and slept as comfortably as on the best spring bed made.

The recent thaw had made a crust on the snow so thick that the deer were unable to dig through it. The herd had to be kept on top of a mountain ridge about 2 miles away, where the snow had not been deep enough to crust. It was very poor feeding ground. The herders hoped to find better moss, free from crust, farther inland. The herd looked very well. It contains a large number of Okhotsk deer. They have longer necks, legs, and bodies, but are no taller than many of the common deer. Having shorter hair, they appear to be lighter than the common Siberian deer, but Nilima says they weigh a little heavier than these when butchered. There were 15 trained sled deer in the herd—7 belonging to Nilima, 5 to the mission, and 3 to the apprentices. Mr. Thomas reported that there was no outside hauling to be done, so they aimed to train only sufficient deer for their own use.

On February 2 we started on our return trip. Two days later we reached Candle and had two talks with the natives. They were anxious to have a school established at some place in that region. But there was not a school population at any settlement. Candle seems to have a bright future as a mining camp, and may have a school population of white children there this coming winter. The Buckland and Selavik natives also asked for schools and reindeer. But their villages are scattered along the rivers, so that there is not a school population in any one of them. They could no doubt easily be induced to congregate in larger villages, but such a move might interfere with their hunting, trapping, and winter fishing, so it would seem to be wise precaution to make a careful study of the situation before schools are located among them. But herds should be established on the Selavik, Buckland, and Kewalik rivers as quickly as possible.

On February 6 we returned to Deering. While there I was impressed with the need of a suitable school building. Neither the Goverment nor the Friends' mission had a building there. The small house used for mission and school purposes was owned by Mr. Z. E. Foster. The schoolroom was so small that it was necessary to have the pupils attend in sections. The Government school was in the name of Mrs.

Anna H. Foster, but the principal teacher was Miss Bertha Cox, a young lady sent out by the Friends' board.

Camp for the herders had been established 14 miles from Deering and four mission apprentices had been selected. After spending four days with them we started for Wales. Going across the country direct we reached the herd near Shishmaref in three days and Wales two days later. The rolling slopes of the little peninsula between Good Hope Bay and Shishmaref are completely covered with splendid moss. It contains pasture sufficient to support all the reindeer in Alaska for several years. It is seldom if ever bothered with crust. After the January thaw all the tundra within 12 miles of Wales was a mass of ice.

Having reached Wales February 17, we were able to be present at the celebration of Washington's Birthday. From March 6 to 11 I taught for Mr. Evans, so as to enable him to make the trip to Teller.

On March 24 and 25 I went to Teller. I found Bango, the chief herder, stricken with rheumatism. He was unable to turn himself in bed. It required weeks of careful nursing for Mrs. Weeks and Mr. Larson to get him on his feet again.

The schools at Teller and the Teller reindeer station were progressing as well as could be expected. The latter was handicapped by the lack of a proper schoolroom. It consisted of a small hall room with no facilities for ventilation, rendering it extremely unhealthy for the teacher and making first-class school work impossible.

I spent March 29 and 30 with the herders on the American River. Their herd was in very good shape. While there I had an opportunity to see a crazy deer. Its horns had been knocked off and its head was bleeding, so that it had left its bloody mark on all the deer it had attacked. When the herder was in the act of shooting, it made a vicious attack upon him and knocked the gun out of his hand. The herders suggested that the madness might have been caused by the bite of a crazy fox. This explanation seemed highly probable, as a number of mad or crazy foxes had been seen in that vicinity, and at other localities along the coast.

I next visited Igloo and Hot Springs. I think one or two herds could be kept in that vicinity. There is a thrifty settlement of Eskimos at Igloo. They asked for a Government school. Mr. George McLain, a miner and surveyor, became interested in these natives and opened up a school for them. Those who have attended have made good progress.

The Koogarok hot springs is like an oasis in a desert to the Arctic traveler. The stream which contains the hot springs flows along the edge of a large grove of cottonwood, which two enterprising miners have homesteaded. They have erected a bath house across the stream

and a two-story road house or hotel among the cottonwood on its banks. It is only twelve hours' run from Nome, and was being well patronized as a winter health resort. In connection with their hotel enterprise they cultivated a large area of the warm soil in the immediate vicinity, raising oats, potatoes, cabbage, etc., in great abundance.

The water is impregnated with sulphur and iron, and they claim it has proven a sure cure for rheumatism.

After my return to Wales I had an attack of "grip," which kept me indoors more than a month. This interfered with me carrying out the plans I had made to take deer from the Shishmaref herd and attempt to capture some young caribou in the peninsula between Good Hope Bay and Shishmaref. A small herd of caribou have been known for several years to feed in that region, and a few are killed every season by the natives.

From June 5 to 9 I visited one of the Cape herds, witnessing while there the two methods of castration. They claim that the fatality is less when the Lapp method of biting and crushing is used. But it seems too barbarous and cruel to be allowed.

I had hoped that a whaler might anchor at Wales in June, which would convey me to St. Lawrence Island. But the conditions of the ice in the straits were such that not one of the fleet came to the Cape. The whalers failing me, I was anxious to connect with the *Bear* at Nome for St. Lawrence Island. When the mail steamer *Corwin* came north, bound for Kotzebue, I took passage on it for Nome, hoping that by going this roundabout but sure way I would be able to learn from the new Friends' missionaries aboard the number of Government buildings that were coming, and whether or not carpenters for their erection were to be secured here in the field. They were only sure of one house (Corwin Lagoon) coming. I reached Nome July 8, a few hours after the *Bear* had sailed on her northern cruise via St. Lawrence Island. I was storm bound at Nome five days after the sailing date of the mail steamer north. The telegraph line was not working, so I could not communicate with you. Taking passage for Wales on the first boat north, I found the *Bear* at Teller on July 19, and upon invitation of Captain Hamlet and the instructions of Doctor Hamilton I transferred to her and remained aboard on the cruise north. I returned to Wales August 9, and found awaiting me there your instructions authorizing an expenditure of \$500 for carpenters on each of the new buildings.

Mr. Albert Olsen, the Government carpenter from Barrow and Wainwright, had been left at Deering, August 7, to put up the Deering building, as soon as the material should arrive on the schooner *Fortuna*. Thinking the arrival of the schooner might be delayed several weeks I went to Deering on the steamer *Anvil* and arranged with Mr. W. D. Wentworth, as foreman carpenter, and Mr. Charles

Lockart, journeyman carpenter, to put up the Deering house as soon as the lumber arrived, and took Mr. Olsen down to work on the Shishmaref buildings. The material for these had been landed July 24. The *Anvil*, on her way south, ran past Shishmaref and landed Mr. Olsen and myself at Teller. On August 26 I returned to Wales on the steamer *Admiral*, and Mr. Olsen returned to Shishmaref on the following day on the steamer *Corwin*.

September 1 to 7 I spent at the Cape herd, on Mint River, marking Government fawns. September 11 I went to Teller. While there I received and marked for the Government 100 deer from the Lutheran Norwegian mission and 25 from Doonak. I also purchased supplies from the Northwestern Commercial Company at that place and paid Frederick Larson, Doonak, Sekeoglook, and Kafeenuk for services in driving the herd to Eaton last December. The fall work being completed, I went to Nome and took passage on the *Senator*, the last September steamer for Seattle.

Very truly,

W. T. LOPP,

Superintendent Reindeer Herds and Schools,

Northwestern District, Alaska.

Dr. SHELDON JACKSON,

General Agent of Education in Alaska,

Washington, D. C.

ANNUAL REPORT OF S. R. SPRIGGS, IN CHARGE OF REINDEER HERD,
BARROW.

BARROW, ALASKA, August 4, 1905.

DEAR SIR: I send my annual reports herewith. They include duplicates of the reindeer statistical reports given to Mr. Hamilton.

The supplies furnished by the Government are supplementary to the native food of seal, fish, whale, and fowl. Fish have been scarce the past year, so, too, ptarmagin; seal have been fairly plentiful, and the herder boys have killed in the neighborhood of a hundred in the past year. These Point Barrow natives are thoroughly accustomed to American food—this is due to the whaling industry. At present those who catch whales can buy American foods from the whaling ships and from the trading stations, and those who do not can work for the station and obtain rations there. I know of several natives who at various times have had over a hundred sacks (25 barrels) of flour in their storehouses, besides other supplies, and calicoes, drills, ammunition, guns, etc.

Seven herders have completed five-year terms, and received their deer from here, and two are now receiving deer and two more will begin next year, and all this from 125 deer.

In the fall of 1899, 100 deer were left in charge of Dr. H. R. Marsh, superintendent of the station, and 25 were given to Ojello. The number of apprentices taken on has been rather greater than the number of deer warranted. Doctor Marsh aimed to take on apprentices enough to take up all the yearly increase, on the ground that the station had no use for deer for itself, but that they should be distributed to as many Eskimos as possible and as soon as possible. As the work was new he did not foresee all the possibilities of loss, as by straying or by death through disease, accident, or old age. The result is that for several years to come no more apprentices should be taken on at the herd (now numbering, July 1, 1905, 83) until it has reached a safe margin above its original number.

In view of this, too, I would suggest that section 15 of "Rules and Regulations Regarding United States Reindeer Stations" need not be put into effect here for a year or two—for why raise the boys' expectations when it is known that they can not be realized at least for the next five years to come?

We are hampered by the want of deer sleds; suitable timber is lacking. Some small birch trunks (seasoned) with curving root attached are preferred; almost anything would be acceptable.

Another want is about 1,000 aluminum tags or earmarks, if you have found anything successful.

Last winter we hauled some freight to Wainwright to pay for moving the school building lumber, but for some cause we did not meet with great success. Five sleds left the deer herd loaded with flour and hard bread. It took them 13 days to reach Wainwright. The roads and deer were in fair condition, but storms were the chief difficulty. The load was not over heavy, about 300 pounds to each sled. This coming winter I am going to Wainwright myself with a deer team and will try and see why better results can not be obtained.

As I wrote you, last fall a rain and sleet storm came and melted what snow had already fallen, enough to form an icy covering over the pasture. Then, as if not satisfied, on January 11 and 12 the thermometer went up to plus 35 and 36, respectively, and we had a rain storm, thereby adding to the ice crust. As a consequence a number of deer succumbed to malnutrition.

Last winter, shortly after the sun set for the winter, during a foggy day, about 80 of the deer strayed off from the herd and their absence was not noticed till the deer had been rounded up for the night. I immediately sent out herders with deer teams to hunt for them, and by the end of March all but two or three had been found. One was too weak to walk, another had lost its leg and had to be shot, and one female could not be managed at all, so it was shot in order that the skin might be obtained. On one trip the herders were storm bound, and

when their food was gone, after living one day on coffee only, they killed a deer for food.

Another accident that occurred this spring was when four deer deliberately walked out on a snow precipice formed along the edge of a small stream. Their weight broke off the moist snow, and they were precipitated into the stream, and before they could be rescued two were drowned and two succumbed shortly after.

I shall make another individual count this fall by brands and report same to you in due time.

I would like to know what responsibility the Government assumes for dogs killed by the herders in watching and protecting their deer? I have, on three different occasions, been called upon to pay for dogs so shot. What is the law upon the protection of deer? Can the Bureau furnish this station a copy of the Civil Code for Alaska?

Respectfully submitted.

S. R. SPRIGGS.

Dr. SHELDON JACKSON,

General Agent for Education in Alaska, Washington, D. C.

MORTALITY LIST, BARROW REINDEER, JULY 1, 1905.

Ahlook.—August 1, male butchered; October 31, 3 males butchered; December 19, 2 males butchered; January 22, 1 male lost (sled deer); January 29, 1 female, "staggers;" February 15, 1 male butchered; March 9, 1 male butchered; March 16, 1 female, "staggers;" June 25, 1 female (drowned).

Shoudla.—November 1, 1 male butchered; November 26, 1 female, cause unknown (sick); January 8, 1 male butchered.

Tukpuk.—August 18, female injured lip; October 18, 1 male butchered.

Puneoneo.—August 29, 1 female, foot rot; September 18, 1 male butchered; November 26, 1 female shot; January 23, 1 male butchered; February 3, 1 female, cause unknown (in good flesh); June 25, female (1) fell into river.

Segeran.—August 5, 1 male died from sore in neck; August 31, female died, "staggers;" August 26, female (1) foot rot.

Pauyoom.—None reported.

Ungawishek.—September 4, 1 female, foot rot; October 2, 1 female, old, ill nourished; October 18, 2 males butchered; December 21, 1 male died, cause unknown; February 20, 1 female died, old and ill nourished.

Ingnoren.—June 25, 1 female fell into the river.

Panigeo.—February 22, male (sled deer) lost, chased away when tied to sled; December 10, 1 male, leg broken and shot.

Brower, jr.—June 25, 1 female fell into river and drowned.

Government.—August 12, 1 female, foot rot; August 25, 1 female, “staggers;” August 26, 1 male, foot rot; October 18, 1 male butchered by superintendent; November 28, 1 female sick; December 28, 1 female old and sick; January 2, 1 male butchered; February 7, 1 male, weakling; April 7, 1 female, old and ill nourished.

ANNUAL REPORT OF FRIENDS' MISSION (ESTABLISHED 1897).

KOTZEBUE, ALASKA, *June 30, 1905.*

DEAR SIR: I herewith submit my report for the year ending June 30, 1905.

The herd of reindeer under my charge pastured during the summer months on the peninsula about fifty miles south of this place, but in October was moved to protection of timber near mouth of Konak River and distant about thirty miles from the mission; the distance of herd from here has prevented much personal supervision by myself upon the ground, but Alfred Nilima and our native herders have been very faithful and the herd, as a whole, are in a very satisfactory condition.

In December, by their request and pursuant with plans of the Department, Electoona and Otpelle, natives owning about 170 deer, were permitted to leave this station and go to a point on Kivalina River, about half way between Kotzebue and Point Hope. Excellent pastures for deer abound in that vicinity and at last reports those Esquimo boys, rendered self-supporting by their herds, were doing well, a type we doubt not of many hundred natives in the near future—a people made happy and self-supporting because of the introduction in the past of domestic reindeer in Alaska.

During the past year we have had the pleasure and profit of two visits from Mr. W. T. Lopp, general superintendent of reindeer for arctic Alaska. At each visit he addressed our natives at several meetings, and in January spent several days with the apprentices at the reindeer camp.

Early in the winter we had several days of more rainy weather. This covered the moss with a glare of ice that for a time endangered the life of the deer, as they could not get their accustomed food. The deer were quickly taken to a higher situation where snow instead of rain had fallen, so that our deer wintered in fairly good condition. This was fortunate for us, as both Nilima and the mission were able to sell a number of deer for slaughter at Candle, where during the past few months there has been a shortage of food, especially of fresh and preserved meats. In all, about \$2,000 worth of meat has been disposed of by Nilima mission and natives. More could have been sold had we been willing to sacrifice last year's fawns at this season. They would draw less than 100, and it did not seem right to reduce the future

strength of the herd in this way, more especially as sufficient had already been disposed of to meet the annual expense of the herd. The people of Candle have, however, had one object lesson of the great advantage in having a herd of domestic deer in the neighborhood when a scarcity of food exists. Incidentally I will say that while as a usual thing the price for any article in this country is just as much as you can possibly get, yet these people were charged no more than at other times.

About 20 deer were used all winter freighting coal at Candle. I am told that they were more satisfactory than either the dogs or horses used by other parties. These sled deer were not supplied by this station, but were brought up from the Eaton station.

Inclosed find table of ownership at Kotzebue, the list of this year's fawns in approximate only, as we have not finished marking same. In about one month will send exact number and sex of fawns.

Most respectfully,

DANA H. THOMAS,
Superintendent Kotzebue Reindeer Station.

Dr. SHELDON JACKSON,
General Agent of Education for Alaska.

ANNUAL REPORT OF THE CAPE PRINCE OF WALES HERDS.

WALES, ALASKA, July 7, 1905.

DEAR SIR: The Cape herds have prospered as well as usual this year. The continued roping in the corral last July and August resulted in some loss and prevented the deer from fattening as they would otherwise have done.

On July 30, 389 deer were taken out of the main herd to form one for the Shishmaref Inlet country. Of these, 247 belonged to Thomas Sokweena, Joseph Enungwouk, Frank Iyatunguk, John Sinnok, Harry Karmun, and Walter Kiyuktuk, and 142 to the mission. They found an abundance of moss in that region and the new herd has done nicely.

The deer left in the main herd have been kept in the valley of the Nooluk River, about 40 miles northeast of the Cape. It consisted of 756 belonging to George Ootenna, James Keok, Stanley Kivyearzruk, Peter Ibiono, Earnest Asazruk, Okbaok, and Eraheruk, 130 belonging to the mission, and 229 to the United States Bureau of Education.

In places these herds are at a disadvantage, to be kept so far away from their base of supplies. The crusted condition of the snow in the vicinity of the Cape in winter and the numerous uncared for dogs prowling about in the summer make it necessary to keep the herds some distance away the entire year. The frequent trips to the Cape

for supplies are very wearing on the sled deer. To stake deer out a night or two on poor moss, in a driving wind, after they have been driven from the camps, which are 40 and 60 miles distant, soon takes the "tallow from their rumps" and weakens them for the remaining months of the winter. An attempt will be made this summer to have their supplies landed in the vicinity of their winter camps.

Another difficulty which these herds have had to contend with is the indifference and unwillingness of herders' wives to live at the camps. They should have been trained in this new life at the same time the boys were.

Last summer and fall 229 deer were sold from this herd to the United States Bureau of Education—37 by the herders and 192 by the American Missionary Association. One hundred of these have been transferred to Deering, 1 (a sled deer) to Eaton, and 7 have died from disease and accident, and 3 were butchered for the U. S. S. *Thetis*, leaving 118 deer and their fawns still in the herd.

In December a herd of 365, consisting of 244 deer belonging to James Keok, 18 to Harry Karmun, 3 to Stanley Kivyearzruk, and 100 to the United States Bureau of Education was taken from the Cape herds and driven to Kotzebue Sound to establish a new herd at the Friends' mission at Deering. James Keok and Harry Karmun accompanied as chief herders.

During the winter our herders needed to sell about 25 steers to raise money to pay for their yearly supplies. In February they tried the experiment of driving them to market instead of hauling them as in former years. Knowing that so small a herd could not be easily driven, they separated about 100 male deer from the herds, drove them to Teller and Nome, butchered and sold 26, banked the money, and returned with their small herd without serious mishap. They marketed the meat for 25 and 30 cents per pound by the carcass and realized \$813 net on the trip.

The herds now contain 1,402 deer and are managed and herded by 14 independent herders, 2 mission herders, and 5 subapprentices supported by the independent herders. These 21 Eskimos own 824 deer. They order their supplies direct from San Francisco, thus avoiding a middleman's profit. They represent all the different factions or clans of the Cape village, and as far as their income allows are helping their needy relatives. They are better clothed, better fed, and live better and cleaner lives than in former years, and are helping their people along these same lines.

Inclosed please find statistics of the herds.

W. T. LOPP,
Superintendent in Charge.

Dr. SHELDON JACKSON,

General Agent of Education in Alaska.

Ownership of deer in the Wales herds, June 30, 1905.

Owners.	Bucks and steers.	Sled deer.	Young males.	Does.	Young females.	Male fawns.	Female fawns.	Total deer.
NOOLUK HERD.								
1. Geo. Ootenna.....	42	12	34	83	34	30	35	273
2. Stanley Kivyearzruk.....	43	11	13	32	12	9	16	136
3. Peter Ibiono.....	7	7	7	8	8	5	5	40
4. Okbaok.....	7	1	4	15	3	10	3	43
5. Erahruk.....	4	.....	.....	12	3	6	3	28
6. Earnest Asazruk.....	.....	1	2	2	1	.....	2	6
7. Kitsenna.....	.....	.....	3	.....	.....	1	2	6
8. Adlooot.....	.....	.....	2	.....	.....	1	1	4
9. Jas. Keok.....	1	.....	.....	.....	.....	.....	.....	1
U. S. Bureau of Education.....	10	.....	45	108	.....	37	34	189
A. M. A. mission.....	1	10	.....	82	8	36	34	216
SHISHMAREF HERD.								
A. M. A. mission.....	13	1	13	67	15	27	30	173
1. Thos. Sokweena.....	9	6	13	40	14	19	18	119
2. Jos. Enungwouk.....	4	5	8	21	7	6	12	63
3. Frank Iyatungok.....	4	4	8	18	7	9	8	58
4. John Synnok.....	5	3	5	7	4	3	3	30
5. Walter Kiyuktuk.....	2	1	2	4	2	2	2	15
6. Woodlek.....	1	.....	1	2	.....	.....	.....	4
7. Harry Karmun.....	4	.....	.....	.....	.....	.....	.....	4
Jas. Keok.....	1	.....	.....	.....	.....	.....	.....	1
Total.....	151	61	154	506	118	201	211	1,402
Owned by Eskimos.....	.....	.....	.....	.....	.....	.....	.....	824
Owned by the A. M. A. Mission.....	.....	.....	.....	.....	.....	.....	.....	389
Owned by Bureau of Education.....	.....	.....	.....	.....	.....	.....	.....	189
Number of independent herders and owners.....	.....	.....	.....	.....	.....	.....	.....	14
Number of mission herders.....	.....	.....	.....	.....	.....	.....	.....	2
Number of subapprentices supported by independent herders.....	.....	.....	.....	.....	.....	.....	.....	5
Received by herders from the sale of butchered deer.....	.....	.....	.....	.....	.....	.....	.....	\$1,029
Received by herders from the sale of female deer to the Government.....	.....	.....	.....	.....	.....	.....	.....	925
Received by mission from the sale of meat, skins, etc.....	.....	.....	.....	.....	.....	.....	.....	392
Expended by mission on the two mission herders and herd.....	.....	.....	.....	.....	.....	.....	.....	204
Received by the A. M. A. (N. Y.) from the sale of 192 deer to Government.....	.....	.....	.....	.....	.....	.....	.....	4,800
Total receipts for 1904-5.....	.....	.....	.....	.....	.....	.....	.....	7,350

THE REINDEER. FROM REPORT OF EDGAR O. CAMPBELL.

GAMBELL, ST. LAWRENCE ISLAND, *June 30, 1905.*

* * * * *

As reported last year, the deer were moved as soon as the fawns were able to travel from the fawning ground on the northern slopes of Mount Mammokanuk to Camp Collier, a distance of some 30 or 35 miles. It was my desire to keep the deer in summer as far as possible from the winter quarters, which were too small and becoming smaller every year with the increased size of the herd, and which had been fed over for the previous four years. Then it was hoped, too, that at Camp Collier, where more driftwood collects than at any other place on the island, we could find enough logs to build some houses at no

great distance from the shore. Richards and Anti both reported adversely on the logs, though Anti told me of a good location for a winter camp.

Richards seemed to have an idea that because this was a Government enterprise there was unlimited funds to draw upon and it would be a lot nicer to order lumber for cabins than to use every available resource on the island. He was no doubt right in his conclusions, if wrong in his premises, but I take it that our work for the people lies more in teaching them by precept and example to be independent and self-supporting, and as far as possible to impart to them the education, enterprise, and liberty-loving spirit of the American that shall enable them to wrest a good, comfortable living from the hard conditions the native Alaskan people have to deal with. This has been my aim in every department of my work here.

Anti was too much afraid to get far away from the station to be really the deer man he is. His selection of a site for the new winter quarters justified the above conclusion, or the fact that he had never looked over the country. When Anti and Ole Pulk were brought in from the camp to await the coming of some vessel to take them away, Sepillu was placed in charge. Two or three parties of campers with dogs stopped at Camp Collier and were the cause of much trouble and severe losses to the herd. Kae luke and Ne mi yuk's dogs chased the deer, ran some into the sea, some on the fields of lava rocks, and strained others by the long distance runs. Several were killed outright, and many more have died at different times since. The boys shot at some, but failed to kill. Kae luke's family so threatened the boys that they were afraid to shoot his dogs any more. I spoke to him about the matter myself, but he denied the whole thing, saying another man's dogs had done the damage. Again, in the winter in my house I told him he would best make some reparation for the damage done, a deer having just died from dogs' wounds received last fall. He became angry, indicated by a peculiar twitching of one eyebrow, and lay hold of my arm; but as I appeared perfectly cool and pleasant, and some of the young men present warned him to desist, he let go, but told me never to mention the subject again.

Others were continually begging from the boys, and for an elder to ask for something from a younger is superior to the demand of a parent from a child among Americans. In one instance, when the boys were absent in the herd, one woman stole some sugar and divided it with another woman. Nemiuk's dogs did as much damage as Kaeluk's, and in addition he has stolen some wood belonging to the boys, particularly a fine log that Sotka, Lahti, and the boys had hauled from the beach with deer and intended whipping into lumber. Nemiuk's excuse was that that portion of the beach had belonged to him long before the white man came, so all lumber drifting there was his.

This is a good Eskimo argument, but he does not apply it with equal justice, for any other Eskimo goes there and brings home what he finds, but because the apprentice boys are subject to and being fed and clothed by the Government they are subjects of all sorts of abuse. No one here considers the Government in the light of a benefactor, but as an interloper, a meddler, to be deceived and cheated upon all occasions that there is no probability of being caught, or if caught, of being punished.

It has been our hardest effort to get the boys imbued with the idea of building up the reindeer camp. They would take everything away from it they could to enhance the friends and people at the station. Last summer, when we were bending every power we possessed to secure material to make the most complete quarters possible for those in the camp, Putlkinhok took a fine 2-inch plank from behind the boys' tent, one that the boys and Sotka had rescued from the sea and brought to the station to his parents.

Do not think we are discouraged. We have no idea of giving up, but we beg of you to remember some of these things when considering the smallness of the results attained. Other men could no doubt have done better, but we have done the best we could; and it is our firm belief that only time and perseverance, with a steadfast faith in an all-wise God who rules the destinies of men, will secure the results we wish. The Eskimos are a slow-moving people—the antitheses of the up-to-date American—but, carrying the antitheses further, once won, changed, will not be the wish-washy ephemerists who to-day are, and to-morrow are cast into the oven, like so many self-esteemed "enlightened" men of this age.

Sigfrid Sotka was sent into camp July 28, and Albert Lahti went down with me September 10, putting new life, vigor, and hope into the whole enterprise. These men were born in the northern part of Finland, where the chief source of supplies is the reindeer herd.

Differing from Lapland, where the people are more nomadic, following the herd with their tents and families, the Finland deer men live in small villages of comfortable log houses, around which in summer are gardens or small farms, but for the most part surrounded by vast moss fields, the deer tended by a few men or boys at certain seasons, though at others left to roam at will, all the deer of one village being together.

In the fall is a general round-up and marking time, when all fawns are branded, ownership being readily decided by the affection shown between does and fawn. Unidentified deer are sold at public auction and the returns apportioned.

This system has resulted in a more civilized and better-educated class of people than the Laplander. The Finns and Lapps alike report a great difference in the characteristics of the deer in the old country

and here, these being much harder to teach. The Finns say a wild deer caught and haltered and staked out would lead readily in three or four days, while here they will not lead after weeks of being tied up. They ascribe the difference to the stormy weather as making the deer crazy. For days and days in the old country smoke from the houses goes straight up to the sky, while here for as many days you can not leave the house on account of the storms.

Lahti and Sotka came to America some twelve or fourteen years ago and have since worked in the iron, copper, and coal mines around Hancock and Calumet in the northern part of Michigan. They are naturalized American citizens and proud of it. Albert Lahti left a comfortable home, which his wife helped him to earn by taking in boarders. He is a fine man in every way and a most valuable help to the work.

Both of these men are of the right sort and just the kind needed as instructors, not alone in herding deer, but in every way to make the Eskimo a clean, energetic, thrifty, independent, intelligent, God-fearing American citizen, and it would not do to lose them. They claim they were told that everything should be furnished them, and not simply the small ration and clothes provided for in the Lapp contracts. They say they were earning from \$75 to \$100 per month in the pleasant home surrounded by the mines of Michigan, but on the representations of Mr. Jasberg, your agent, left to come here for \$600 per year and everything furnished. In view of the unusual demands our stores did not permit us to fit them out very well, but with the kind permission of Doctor Hamilton additions were purchased in Nome and supplemented by things from our own stores, so that their few simple and inexpensive demands were provided for. Those articles from our own stores were offset by drawings from the Government stores, the basis of estimation being double San Francisco prices.

The Finlanders have been very economical in their requisitions and careful of all kinds of property committed to their care. An Eskimo is about as wasteful as many negroes we have seen and read about, and the influence of our new instructors will have a blessed effect. They would live and get rich where others would die of the blues before starvation caught them.

Appended is a journal kept by Sigfrid Sotka. You will notice one house, the road house at Camp Collier, was finished September 22. Into this the two wives were moved, while the boys and men selected and cut logs for the new houses at the new winter quarters. September 29, ten deer hauled heavy loads of logs on sleds 13 miles over wet boggy tundra, lakes, and rivers to the new camp. This was repeated many times, some working on the beach cornering the logs and dress-

ing them, while others found moss, dug and piled sod, and began building at the new camp. The boys' house was finished October 19 and the herd driven to its new pasture on the 21st, the women still living at Camp Collier. The Finn's house was begun October 22, pretty late you will say for this climate, but justifiable, as it was the united decision of us all that such a plan was the best one. The wives were brought over November 11, the new home being finished, with the exception of a storm shed, which was added later.

December 1 an old Siberian doe died as a result of injuries by dogs in August. This one and one other had badly swollen hoofs, very much like the descriptions I have read of "hoof disease." My opinion is that all the cases are simply septicemia, resulting from wounds about the hoofs. The skin of the legs is tough, springing together over wounds or punctures and healing rapidly, preventing egress to pus found in the connective tissue and softer understructures, just as frequently happens with insignificant wounds about the human hand, which so often result in several lancing or loss of fingers or whole limbs and even life.

The post-mortem appearance of those deer recorded as dying from injuries by dogs precludes any other diagnosis. Some of them were sickly from the time the dogs chased them, so we were able to identify and note them.

We believe if something is not done, not talked about, or threatened there will be no controlling the dog nuisance here nor getting anyone to shoot dogs which prowl about the camp, but if your orders given the boys are backed up by punishment sure and swift we shall have no more trouble.

The chasing of the deer herd results in greater damage than the loss of the few the dogs kill outright, which was twelve this winter. My men tell me instances of deer running very hard when frightened or hard-pressed and dropping dead. Others live for several weeks, but die of the strain. A reindeer is more delicately constituted than a horse or cow and can not stand the rough usage. These things must be impressed on our apprentices.

As a direct result of the unusually stormy winter we lost 6 deer from congestion of the brain and 4 from blackened spleen, while 14 deer are missing, having become lost in a storm, and 42 out of 76 fawns born have perished from the cold. Deer dying in camp or killed because too sick to live are examined and all abnormal appearances reported. The 6 cases of congestion of the brain were characterized by the enlarged arteries of the cerebrum, and in the dura and pia mater, just beneath an imaginary band connecting the horns.

The deer face a storm and I presume the intensely cold wind has much the same effect as the too rapid eating of ice cream has upon one.

In the four cases of blackened spleen, the blood became thinner, lighter in color, and coagulated very rapidly. Fawning began April 15, as usual, but in the midst of storm after storm. The thermometer was as low as 15° F., and with a terrible northeaster to drive it in, even the full-grown deer succumbed, so what could we expect of the tender fawns!

Lahti and Sotka built a small cabin on the fawning ground and in it thawed out many a fawn, some of them as many as three times before they were old enough to live. Some of the mothers waited around the cabin until the little one was given it, while others deserted their young as soon as born, nor could they be induced to adopt them. When born the fawns were licked dry, after which they lay down, only to be quickly covered up by the drifting snow and deserted by the mother, who moved off with the herd in the face of the gale. After one storm the herders found the herd in two sections, one as far as 15 miles from camp in the direction from which the wind came. As soon as it was thought safe to do so the fawns were marked for their respective owners.

We have been greatly bereaved in the loss of two of our herders. Putlkinhok died in the camp of an abdominal or inguinal abscess, February 4. He had probably strained himself in some of his feats, for he was proud of his strength and loved to develop it more. He was noticed to have clasped his hand over the left inguinal region several times when throwing the lasso, and the latter part of January, during a visit to Gambell, spoke to a friend during a wrestling bout of a severe pain in that region.

He was warned to desist, but continued wrestling and conducted a native dance with his young wife. January 24 he left for the camp in apparently good health, and when Penin came up on February 1 for medicine for Putlkinhok I thought it was only a severe constipation, quite common among Eskimos, so sent medicine and proper directions, but did not deem the symptoms alarming enough to justify a further closure of school (for I had had only one week's school since my return from the camp), nor a trip of 60 miles in such weather, though all would have been gladly done if I could have known the final results. Sepillu came up February 15 and told us of the sad death, which was a terrible blow to the poor father, crippled with sciatica and nearly blind. I went to the house to try to comfort them, but the old man tried to kill me, though he was harmless from his crippled condition. But it was pitiful to see him wandering around, hunting for me, because I had sent the herd so far away his boy had to die without his seeing him.

Then they refused to let the younger brother return to camp when fawning began, being afraid he should die as his brother had done, so Oonmookok was discharged, giving occasion for another scene with

father and mother because they were deprived of the rations allowed the parents of two apprentice brothers. Besides loss of these two, Sepillu, whose term of apprenticeship expires September 1 of the present year, was taken sick with articular rheumatism, resulting in organic heart disease, and was brought to the station March 21, since which time he has been under treatment, but will never be the man he was before. His sickness is a result of the long tramps over the wet tundra last fall when moving logs and lumber to make the house and the exposure due to the lateness of the season and the insufficient housing.

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Dr. SHELDON JACKSON,
General Agent of Education in Alaska.

E. O. CAMPBELL,
Superintendent.

ANNUAL REPORT OF REINDEER, SWEDISH MISSION, GOLOFNIN.

GOLOFNIN HOME, *July 18, 1905.*

DEAR SIR: I have the honor to submit the annual report of the reindeer herd at Golofnin. The herd is doing well and is in good condition.

The herders are the same as last year, with the exception of Constantine, who died at Gowrie, Iowa, while on a visit last summer. John Apak, who is a brother to Constantine, has been put in charge of the deer. He has also another brother who takes turns with him at intervals. Nils Klemetsen has two boys as apprentices, Laury and Dewy.

There are in all 26 people at the herd. To the best of my knowledge there is good feeling and harmony among the herders.

John Pomerotchock, one of the mission apprentices, is not well. He gets sick every winter, gets cold very easily and it settles on his lungs. I fear that he is not strong enough to be out in all kinds of weather, as a herder must be.

The school work is prospering every year. Last year's attendance was the largest since school was opened. We need a school building with two rooms and a native teacher for the primary classes. It is impossible for one teacher to do justice to 70 pupils.

Being over at Unalakleet last spring, I laid this matter before Dr. C. O. Lind, the supervisor of reindeer and schools in Alaska, and I hope that he has given you some suggestions concerning school building and native teacher and some plan to help the Eskimo children to get education. There are many children who live far away from school who would be glad to attend school if they had an opportunity.

In our orphanage we had 30 children last winter. They are all

attending school during the term. The girls are taking their turns in the kitchen, doing cooking and housekeeping work. The boys are doing the fishing, hunting, and other practical work.

The mission work has been blessed wonderfully these last years. The people are living a sober and good Christian life. We have now at Golofnin a Christian church of about 400 members. These are scattered abroad—at Marys Igloo, Deering, Kotzebue, Norton Sound, Council, and the neighboring villages on Golofnin Bay.

My wife and I will leave here in a few days for a year's vacation and go to the States. We feel the need of a change both of climate and surroundings after five or six years in Alaska.

Would you kindly send to the station the annual report of "Introduction of Domestic Reindeer into Alaska?"

Yours, sincerely,

O. P. ANDERSON.

Dr. SHELDON JACKSON,

Washington D. C.

ANNUAL REPORT OF REINDEER, MORAVIAN MISSION.

Bethel, Alaska, April 27, 1905.

DEAR SIR: Since all the traveling and winter work with the deer is now over, I can give a report about all that has been done this winter. In order to give a full report, I may touch some points already mentioned before.

The Copper Center expedition was started in good condition, December 15; last report from the Aniarak River (to where one of our boys guided them) December 22, all well.

December 22 Mr. Johanson, with four natives and the 324 deer, arrived. Six had died on the way; 1 we had to kill here and 1 died going into the mountains; total living deer, 322. December 27 they started for the mountains, with our men in company. Mr. Johanson inspected also our herd here; also questioning the Lapps and natives concerning the deer, of which, no doubt, he will give his report.

As sickness had been in our herd, I kept the new herd at the old camp, 12 miles this way from the new camp, and as the herd is getting very large I wanted it divided so as to have the mission deer separate from the Lapps.

Five times they have come down for their goods which, owing to heavy road, has been rather hard work, the tundra having almost no snow since February and only the rivers to travel on; yet they went up with 15 loaded sleighs in three days, on the most part glare ice. Robert and Crist, the latter a new man from Nushagak, with some natives from here who liked the deer, have traveled on the tundra,

visiting the villages west-northwest from here, and although having only new deer have made good time and done good work.

February 20 and the following days we took the rest of the mission deer from the Lapps' herd after considerable work. The deer had been scared in the fall and made a stampede and we had to change the entrance again. We drove our deer to the new herd at the old camp, where our native herders, Mr. Spein and Sara, have charge of them.

Here we drove them again into the corral, and took 51 male deer for butchering at Nushagak. More I could not spare, as most of the big deer had been sent to Copper Center. Robert and Crist drove them to Nushagak, Mr. Spein and Willy going with them for seven days. While we had no snow here and the going was difficult, Mr. Spein reported very much snow at the headwaters of Tagiak River. They had gone southeast and struck the big lake at the head of the Tagiak River. Mr. Spein and Willy came back in four days.

I have added two new apprentices to our herders this winter, Hermann and Paul, so there are now eight natives with the deer, Willy and Carl with Sara, and Spein, Wasely, Robert, Tomy, (Henry) Hermann, and Paul with the mission herd. I have been there a third time, beginning of April, and have given them all the instructions I could and left them well and happy, with good courage for the future. After all this we can say we have had a busy winter with the deer, considering that after the Copper Center expedition had left sleds had to be made and mended and new deer trained and used, all the time counting and moving the herds.

Wood for sleds and harness has been cut to dry for further use. Mr. Sara will have to pay 12 female deer and Mr. Spein 10 to the Government, of which our treasurer, Rev. P. de Schweinitz, will notify you.

The Finn family here is well, and when we go to the schooner I will take them to the ships. I inclose also the bill for their goods received, to which I have to remark that they (especially Mr. Karbum) promised to pay for all clothing. Therefore I have written all their clothing extra, and all provisions extra. According to your letter of August 26, and the one by Mr. Redmyer, and according to Mr. Redmyer's verbal advice, I have given them what they needed. It is not so easy to feed such a family, who have absolutely nothing for themselves; we had, however, plenty of provisions.

Our schools have been kept in regular order, but the girls' industrial department we are obliged, owing to too much other work, to suspend from April to August. Beginning with August we will commence again and then hope to be able to continue the full eleven months a year, but this year at the beginning we could not do it, and could only keep seven months, but that with good services. The boys will be at work all the eleven months.

I am thankful to be able to report that by the Lord's help we have been well and could do all our work in health and strength. To my share fell a good part of traveling, and I was able to visit all the villages on the tundra and coast from Nelson Island around to the river, where I found much desire for salvation, and saw the lost and miserable life of the poor people in an awful extent. Now, after twelve weeks' winter travel, I will gladly do some gardening at home until the boating has to be done again.

The winter has been exceptionally mild. Only at Christmas we had it rough and cold, later often storms and rain, but no snow. The result is that we can expect the river open three weeks before the usual time.

We are glad to learn of a new mail contract by which we will receive four mails in summer. Hoping to hear good news from you and information as to where the (loan) deer shall go to next winter,

I am, respectfully, yours,

AD. STECKER,

Superintendent Moravian Mission.

Dr. SHELDON JACKSON,

General Agent of Education in Alaska,

Washington, D. C.

REPORT OF THE DEER EXPERIMENT ON THE NUSHAGAK FOR THE SUMMER OF 1905.

By Dr. J. H. ROMIG.

During the spring of 1905 a herd of 51 deer were received, most of which were young deer and weighed about 100 to 120 pounds, and a few old deer, the largest of which dressed 130 pounds.

The bringing of the deer for guides and equipage and sending of men from Nushagak and provisions in all amounted to \$190.77 until the herd was established for the spring in the mountains. This includes the expense of a trip to look for suitable pasture.

The deer left the Bethel herd on March 2 and arrived at Nushagak on March 21, making an excellent trip without loss or injury of any of the deer. Pasture was found to be abundant and of good quality all the way, and no trouble was occasioned at any time or camp to secure pasture for the deer.

An effort to drive the deer was to have been made but the deer came too late for that experiment desired by the whites, and must be tried at another time.

On May 1, 1 deer died and 5 strayed away among the brushes and were not found.

Forty deer were killed and sold, as the figures will show.

Five deer were brought to the mission at the close of the season, as some of the white men wanted driving deer.

When these five deer were brought down we were unable to be with the expedition and the boys tied their feet too tight and we have had to kill all but two of them, as they were crippled from the tight tying of their feet. Those that we killed of the ones brought down have been salted for the mission school for winter and used by the same, and do not figure in the report except as they are accounted for, and later there may be some profit from the sale of the two living ones and the skins from the five.

When the deer came the largest when dressed weighed 130 pounds and the next 120 pounds. This summer the largest weighed when dressed 208 pounds, and the larger ones went from 150 to 190 pounds and the smaller ones went from 112 to 140 pounds each. This will show that the pasture is good, that the deer have made such gain in weight.

We began selling meat at 30 cents for hind quarter, 25 cents for front quarter, and 20 cents for ribs, but we found this too high to make large sales, as well as 18 cents a pound for whole dressed deer. The deer have to compete with cattle and sheep as brought by the canneries, if they are to make a business, and after talking the matter over with Bishop Hamilton the price was changed to 18 cents for hind quarter, 15 cents for front quarter, and 12½ cents for ribs and 12½ cents straight for whole deer, at which price the market is good, and we could have sold more during the winter and summer if that price had existed all the time.

Cost to bring and locate the herd.....	\$190.77
Cost to hunt runaway deer.....	15.00
Cost to keep the herd from March 21 to August 5, and to sell and deliver meat	78.89
Cost to keep boys after August 5, until a boat takes them home, and for transportation to the Kuskokwim	60.50
	345.16

The cost of bringing and of sending home the herders, \$190.77 and \$60.50, or \$251.27, would have been profit from a permanent herd.

Total sales of deer and of pelts:

Sale of 40 deer	\$768.68
Cost of experiment	345.16
Profit from deer experiment	423.52
Average sale price of deer	19.21
Profit on each deer sold	10.58

The 5 deer would not have strayed from a big herd. There would have been no necessity to bring down remnant of herd from a big herd, and therefore no loss on damaged skins or from deer that the boys tied too tight or the heat injured.

In all, the pasture at this place is unsurpassed anywhere, the market good, and the herd in easy access winter or summer.

Note that 40 deer had to pay all expenses of the trip both ways and for the runaway deer and for the 5 brought down or injured as a remnant of the herd.

From winter and summer market I think our herd should support itself.

It may occur to you that the loss of the 1 deer from death and of the 5 that strayed away was unavoidable, but the remnant of the herd, you may think—why were they not sold?

We sold all we could on August 3—14 in all—and had 6 remaining in the corral. The herders said they could not keep so few, as a small number were very fearful and would not remain on the pasture grounds. It was thought unwise to let them out of the pen.

Three of the deer retained were driving deer and were desired by white men to be kept alive to be driven this winter. Three were the smallest at the herd and we hoped they might be also used as driving animals, but as we had no sale at the time we were forced to bring them all down.

I had spent two days on the launch without sleep, delivering meat, and on August 3 was compelled to settle up with a cannery that was leaving, and so sent another launch and lighter for the live deer, as they could not be kept in the pen or let go.

The day was very hot, and the heat and the tight tying of the deer caused one of the best deer (a big sled deer) to die on the road. I sold him at a discount. The 2 other sled deer had to be killed, and later on 1 of the small ones also, as their feet were too swollen and sore to get around on and feed. This meat we salted down for the school. Two young deer are alive, and if they get to be good on their feet will be sold alive.

These figures show for themselves and, though not glowing, show a profit from deer absolutely unnecessary to the large herd. A permanent herd here will yield better returns, but we beg to claim again the deer can pay expenses here at this place, and some profit as well, and that the pasture and location for a herd is second to none, and though attended with some losses and difficulties the experiment has not failed, and some difficulties will be less if you continue this business.

REPORT OF REINDEER HERD AT FRIENDS' MISSION FROM JANUARY 15
TO JULY 15, 1905.

DEERING, ALASKA, *July 22, 1905.*

When the herd arrived in January in charge of Mr. Lopp, the party was greeted with much joy and enthusiasm by the Deering Eskimos. The mission selected three boys, one of whom had a wife, and found them very ready to agree to become apprentices. The necessary equipments for the herders' camp were secured and camp

established as soon as possible. The names of the boys who were taken first as apprentices are Frank Echukyuk, Thomas Okok, and Joseph Shopshak. Frank has a wife, Kitty, and later in the spring Wheeler Ayugek was added to the herders' camp. James Keok and wife, Florence, and Harry Karmon are the three supported by the Government.

James Keok has two children and Frank Echukyuk has one boy. James Keok has given excellent satisfaction as head herder, and we take much pleasure in recommending him to be kept in that capacity.

The herd has been kept near the coast at a distance of from 10 to 15 miles from Deering, and good moss is abundant all over this region.

During the time since the herd came to Deering the reindeer have been a means, directly and indirectly, of helping the whole community, both Eskimos and whites. Some freighting has been done, and the money obtained in this way by apprentices has been used to help blind or needy relatives. The apprentices have been carefully selected, so that different families may be represented and the good distributed. The herd has also furnished to many miners fresh meat at very reasonable rates, and is appreciated by the whole community as a great boon to the country.

The amount expended on mission herders amounts to \$373, being an average of \$62.16 per month.

Income from sale of mission meat		\$119.60
Income from sale of mission live deer		200.00
Income from hauling freight		41.00
Income from sale of skin		3.00
 Total income		 363.60

Also \$83 for hauling freight was distributed among the boys.

Number live fawns born in the Mission herd	46
Number live fawns born in the herd of J. Keok	96
Number live fawns born in the herd of H. Karmon	5
Number live fawns born in the herd of Stanley	1

Ownership in herd June 30, 1905.

Owner.	Bucks.	Steers.	Sled deer.	Does.	Fawns.	
					Female.	Male.
Mission	10	10	6	56	26	20
J. Keok	21	43	8	159	51	45
H. Karmon	3	3	.....	9	2	3
Stanley	2	.....	.....	1	.....	1
 Total	36	56	14	225	79	69

Total June 30, 1905, 479.

ANNA H. FOSTER,
Superintendent Friends' Mission, Deering, Alaska.

Dr. SHELDON JACKSON,
General Agent of Education in Alaska.

ILIAMNA REPORT OF REINDEER HERD.

The herd of 319 reindeer taken by Mr. Redmyer from Bethel December 4, 1904, reached Iliamna Lake March 24, 1905. The following is the report of the herd belonging to the Government August 31 of the same year:

	Adults.	Fawns.
Male		
Female	109 190	76 63
Total.....	299	139
Grand total.....	438	

SPECIAL BETHEL (ALASKA) REINDEER REPORT.

BETHLEHEM, PA., November 1, 1905.

DEAR SIR: Owing to the limited time at my disposal and the difficulty of travel up the tributary on the left bank of the Kuskokwim, near which the reindeer herd is stationed, about 80 miles from Bethel, I regret my inability to personally inspect the herd proper. I did, however, visit a portion of this herd—50 males belonging to the Moravian mission, and sent to the Nushagak to be disposed of to the salmon canneries as venison. These 50 had been driven over from the Kuskokwim in spring by Robert Egsak and Crist Petersen, two of the apprentices. So far as I could form an opinion, they seemed to be in good condition. They were being cared for near a tributary of the Nushagak, on the right bank, known as Wood River and near lakes of the same name.

Moss was quite plentiful and the water of the lakes and of their outlet is very clear and pure. In so far this region is well adapted to the deer. But Robert, who is an Eskimo of unusual intelligence and good judgment, a man probably in the thirties and an ex-scholar of Bethel, stated that special difficulty arose here from the abundance and density of the forests which abound—chiefly spruce. When separated by the trees the deer are apt to stray off in small groups and when once thus scattered are liable to lapse into a wild condition. Special vigilance was therefore needed on the part of the herders. In due time these deer were disposed of, though not at so high a price as had been hoped—on the average at $12\frac{1}{2}$ cents a pound—since the meat here encounters competition through the usage of the cannery superintendents, who bring live cattle on their vessels at the opening of the season and slaughter them as needed.

From the Rev. A. Stecker, of Bethel on the Kuskokwim, local superintendent of the reindeer enterprise for the Bureau of Education, I learned the following facts of interest in reference to the herd

near Bethel. Nine apprentices are at present serving, all of whom are pure Eskimos, with the exception of Crist Petersen, to whom reference has been made, viz.:

Wasili Kavagleg, whose term expires on January 1, 1906.
Robert Egsak, whose term expires on January 1, 1906.
Henry, whose term expires on January 1, 1908.
Tommy, whose term expires on January 1, 1908.
Paul, whose term expires on January 1, 1910.
Karl, whose term expires on January 1, 1910.
Willy, whose term expires on January 1, 1910.
Crist Petersen, whose term expires on January 1, 1910.
Herman Neck, whose term expires on January 1, 1910.

All of these are graduates of the school at Bethel except Petersen, who is a graduate of the school at Carmel. Most of them are married men, and the rest contemplate marriage in a very short time. They have given satisfactory evidence of their ability, in the opinion of Messrs. Sara and Spein, the Laplanders who are in Government service as deer herders near Bethel, with the exception of Herman Neck, whose lack of robust health has determined Mr. Stecker to dismiss him from employment with the herd.

Mr. Stecker was not in a position to state the exact number of the deer at the time of my visit, owing to the fact that the Laplanders had not yet made their returns. It was his intention to forward full statistics, according to the blanks received, so soon as he had heard from Messrs. Sara and Spein, whose homes are about 12 miles from the deer of the mission. The loan of 176 deer, which are to be returned to the Government by the mission, expires in March, 1906, and Mr. Stecker desires instructions in this connection. If it is desired that he should retain them in the vicinity of Bethel, he is quite willing to do this.

Of the fawns which were dropped in the spring of 1905, 92 males and 85 females were alive on July 31. Twenty-two had been killed by old deer early in the season. For the first time the phenomenon was observed of old deer savagely catching the helpless young on their antlers and dashing them to death. For this the herders and apprentices were not at once prepared.

On April 21 an apprentice failed to properly extinguish a camp fire. The moss and dead leaves caused it to spread, and the reindeer took fright and scattered. In time almost all the deer were recovered, but a few were killed by Eskimos. A man from Ogavik shot 1, not knowing it to be a domesticated deer. A man from Ohagamiut and one man from Kalchagamuit each killed 2 and 1 calf, not knowing them to be domesticated deer until they skinned them and then saw the marks. These men regretted their mistakes and brought the skins to Mr. Stecker with apologies. One man of Kalchagamiut killed, according to one account, 10, according to another account 13,

and, report has it, knowing them to be domesticated deer. At the time of my visit he had offered no explanation of his conduct. On August 7 Mr. Stecker wrote to notify the commissioner at St. Michael in accordance with his instructions.

During the winter of 1904 and 1905 nine separate expeditions were made with the deer, so that their qualities as draft animals were well tested. They might perhaps have been used more frequently had not 34 of the draft and driving deer been taken off for the expedition to Copper Center. It is necessary to allow some years for proper development before a deer is sufficiently mature for such work. Furthermore, a large part of the supply of sleds and harness was sent to Copper Center. Other sleds and harness had to be made. As a rule, about 9 deer, each with its sled, constitute a train, each sled carrying about 200 pounds of freight.

In November 58 deer were driven to Bethel, and returned in December to the deer camp, about 80 miles away.

When the expedition started for Copper Center, on December 15, Mr. Spein and the apprentice Tommy accompanied them, the former being four days absent and the latter eleven days.

About the same time Mr. Sara, with Robert and Wasili, came to Bethel and returned with the new herd, the sleds being laden. As a rule, it requires four days to make this trip one way, on account of the nature of the country. On this expedition the Eskimo sent from Unalaklik deserted them, though Robert was ill.

On January 1, 1905, Messrs. Spein and Sara, with Tommy, came to Bethel with 14 deer and returned to the camp, each deer drawing a load.

Later Robert came to Bethel with 5 deer and remained in the vicinity for three weeks, driving from village to village, in order to do evangelistic work together with two other Eskimo Christians.

When he returned to camp, Wasili and Herman brought 8 deer to Bethel to transport supplies to the camp. For a similar purpose Piet, Sara, and Karl came to Bethel during the middle of March, and also took back with them Mrs. Sara and her three boys, who had been attending school.

On March 1 Robert and Crist started for the Nushagak with 51 deer to be sold as venison, and for eleven days Spein and Willy accompanied them driving 6 deer which belonged to the Laplanders.

At the end of March, Tommy and Paul drove 8 deer to Bethel and returned with supplies on the sleds.

The deer were counted four times. Most of the deer that were driven during the winter had to be broken in after the expedition had left for Copper Center.

The superintendent visited the deer camp three times during the season, being absent from Bethel for this purpose in all for twenty-six days.

Thus the capacity of the reindeer belonging to the Bethel herd has been well tested, and they have approved themselves. As yet, however, there is not the demand for their services as freighters which will arise if the Kuskokwim Valley opens up for white settlers.

In this connection an explanation is due as to why the herd must be stationed at such a distance from Bethel. It appears that when kept in the lowlands, where nothing is to be met with save swampy tundra, the deer are subject to a serious disease of the hoofs. They seem to require firmer uplands in the vicinity of the snow, where there is also good fresh water. That this militates somewhat against their constant use as driving animals is evident, since at times it is necessary for the missionaries to set out on winter journeys without delay. They can not wait till the deer are brought down. Yet thought is being given to the solution of this difficulty.

Other difficulties are also presenting themselves in connection with the herding of the deer, which experience must assist in overcoming. When roaming over swampy lands, where stagnant water abounds among the tussocks of grass, a species of worms appears to infest them. During summer, too, they are liable to a disease of the head. So also a certain fly stings them and deposits its eggs beneath the skin. When these hatch out the young grubs eat through the skin, tormenting the poor deer and injuring the skin and fur, since they leave a hole about the size of the circumference of a lead pencil. In time these holes grow over, but leave a defect which detracts from the value of the skin.

As to the suitability of Quinhagak as a deer station, I learned that there is moss in this vicinity. The mountains, too, are nearer—say 20 miles away. But the problem of fuel would be a difficult one for the herders. No trees whatever grow in this region. They would have to depend upon driftwood both for the erection of their houses and for fuel, and the hauling of this driftwood from the beach at Good News Bay would be no easy task. Yet, if it is desired, I am sure Mr. Schoechart, the Moravian missionary at Quinhagak, will be glad to give the experiment a good trial.

That the Eskimos of the Kuskokwim appreciate the value of the domesticated reindeer is apparent from the ease with which apprentices may be secured. The very pick of the young men is as a rule to be had. That this benevolent undertaking of the Government will prove to be to northern Alaska the great boon which its far-seeing projectors had in mind I am convinced.

I am, respectfully, yours,

J. TAYLOR HAMILTON, D. D.,
*Bishop of the Moravian Church and
Member of its International Mission Board.*

Dr. SHELDON JACKSON,

General Agent of Education in Alaska.

BISHOP INNOCENT ON EDUCATION IN ALASKA.

During the last few years, since the elevation of the Right Reverend Innocent to the Bishopric of the Russian Orthodox Church in Alaska, the cooperation of that church with the public school system has been cordial and marked. To give his views a wider range of readers, extracts from a late letter of the Right Reverend Bishop Innocent, printed in the July supplement of the Russian Orthodox American Messenger, are here reprinted.

THE SCHOOL IN ALASKA.

[Excerpts from a letter of the Right Reverend Innocent, Bishop of Alaska.]

No one doubts that in principle our clerical schools must be universally acknowledged to be one of the most important and adequate means of enlightening the people, of planting and strengthening in the hearts of men the true faith and morality. Above any doubt, they present the same characteristics here in Alaska, where are few institutions for the instruction of the people, and still fewer educational institutions.

Yet it can not be denied that the condition of the modern schools in Alaska is far from brilliant and pleasing, but rather sad and destitute. The school "ship" is of ancient construction; the rigging and the sails have been imported from Russia and no measure taken; all the provisions also come from Russia. It is loaded above its power and its load is of two kinds; part of it is church furnishings and part household utensils. In the sweat of their brows Russians unceasingly toil at the oars and over the rigging: they are priests, readers, and their few helpmates. The point of destination and the route are unknown, moreover the ship owns no compass. Such is the general outline of our Alaska school.

In what way could we help these poor people? How to assure to them inspiration, in what direction to lead them?

We ought certainly to give them an adequate compass and to point to them their way; in other words we ought to give them a regular statute. But this we can not do as yet, as we do not possess either the one or the other. The word of the oarsmen ought to be made easier also by increasing their number or at least by their labor being paid sufficiently, in accordance with the proverb "Do not make your horse run with your whip; make it run with oats." But we are not at liberty to spend one additional grain of these oats. And asking Russia to give us more and more help I consider, in the present circumstances, perfectly immoral, especially reading it advertised about the Alaskan wealth:

"Gold, gold, gold, gold!"

"In far Alaska are riches untold."

And so, it seems to me, at present we can do only one thing; we can relieve our ship of all superfluous load, leaving on it only that which does not overtax the strength of the oarsmen. In the given instance all the "household utensils" ought to be taken off.

To see that I am right, a man must first of all remember that when in 1867 Alaska was given over to the United States the Russian Church reserved the right, or rather the duty, to keep up the Russian faith in the great Russian dominion. Yet at present we strive to give to the orthodox children a religious and moral education and also a general education, which is not among either our rights or our duties.

Consequently, without further delay, we ought to give over the general education of the orthodox children into the hands of the Government, reserving for ourselves

only their religious and moral bringing up. And those for whom there is no room in our asylums we ought to send in peace to the teachers of alien creeds, abstaining from calling their missionaries "soul snatchers," as is customary to this day.

When Alaska was Russian territory it was good sense to introduce the Russian language here and the Slavonic Church manuals. But even then this ought to have been considered only a temporary expedient, similar to our forefathers being instructed in the orthodox faith by the Greek clergy and in the Greek language. But the Greek language and the Greek clergy being in those days soon replaced by the Russian language and the Russian clergy for Russia, the similar process ought to have taken place here also, even if Alaska remained Russian territory. But now, when it is not Russia here any more, we have no reason, no right, no need, and even no possibility whatever to keep up the Russian language and the Slavonic Church service in Alaska.

Out of 10,509 whom we count here within the pale of our church only 59 are Russians, and these isolated exceptions are almost entirely our clergy. As to all the rest, 99 per cent do not understand either the Russian speech or the Slavonic service. Of course we could not adopt some native Indian dialect, of which there are several dozens here; but, in my opinion, the English language being the language of the State, we ought to take it also for the language of our church and our school if we have no intention of giving ourselves up to conscious retrogression and to certain death from senility.

We need not be afraid of this idea. On the contrary we ought to wonder that it was possible to keep up so long the unnatural condition of affairs, which allowed a handful of Russians to teach 10,000 natives, with so much sincere zeal, in order to educate these natives, when it would be so much simpler to learn the dominant local language themselves. Yet not so very long ago the zeal of the planters of the Russian language was so great that the children in our schools and asylums were forbidden to use their own language, in order that they might learn Russian the sooner. This is why one of our readers, a born Kolosh, having studied in a Sitka asylum during six years, has so completely forgotten his own language that at present our local priest has to hire, every time he makes a sermon, a special interpreter, who is to be paid in money by the parish authorities in Juneau.

But it may be objected that, perhaps, the natives need the Russian language in their everyday life, in their earning their daily bread, or for religious purposes.

Not at all. On the contrary, in their everyday life they limit themselves to their dialect, according to the locality. When earning their daily bread, in factories, shops, and on steamers, they exclusively use English, everywhere. As to the religious purposes, we already have a goodly number of translations into native dialects (the prayer book, the Bible history, the gospels, holiday church services, and so on), and in English we have all the Bible, the octoich, the order of church services, the missal, the songs of special services, the sacred history, the catechism, the prayer book, the lives of the saints, and so on. Thus the Russian and the Slavonic are quite unnecessary here, and, moreover, they overtax the studious faculties of all the 10,000 of our spiritual children. And if, in spite of the common sense, the study of these languages is still insisted upon in our schools, it is because our clergy do not want to understand the anomaly of this order of things.

In some of our schools, in Sitka, Unalaska, Kadiak, Kenay, and other places English also is taught, in spite of the fact that side by side with us there exist state schools which are always ready to open their doors to anybody who wishes to come in. But in my eyes it is as if some Chinaman or some Abyssinian came to Russia, provided with money by his government, and started teaching Russian language to the Russian children, or perhaps his own Chinese or Ethiopian, so that in the course of time he could communicate with his Russian pupils. In the first instance I would call this zealous man *naive*, in the second simply *silly*, for would not it be much

more reasonable to study the Russian language himself, so as to be able to communicate with his own pupils and all people who understand Russian?

Those who do not agree that the orthodox children ought to be allowed to go to the State schools would do well to abandon once for all the prejudice which makes them think that in the Government schools our children run the risk of being affected by religious sectarianism. It is possible that in the olden times there was some reason for this opinion, but at present I could discover nothing of the sort. The Government schools are entirely nonconfessional. And so no Roman Catholic, no Protestant, no Episcopalian is in the least afraid of sending his children to these schools. We Russians alone are afraid that in them, together with geography and the multiplication table, our children will be instructed in heresy.

The Americans themselves are so free in everything, except money questions, that they tolerate our state of things, especially in places where there is no State school. But where these schools exist, their attitude is very different: in such places we are officially requested to send the orthodox children, even those in our asylums, to the public schools regularly.

When, in the summer of 1904, I was in Unalaska, I received the following invitation from the teacher of the local public school:

“DEAR SIR: We should be very pleased if you found it convenient to visit the State public school whilst you stay in Unalaska.

“Very respectfully, yours,

“W. A. DAVIS.”

Of course, it was quite “convenient” for me to visit this school, because I visited all public schools in Alaska even without invitation. And so one morning, accompanied by the Rev. A. Kedroffsky and the Rev. I. Orloff, I went to this school, where I was received by the man teacher, the lady teacher, the members of the local school council, and by Mr. Hamilton. They very civilly showed me the large, clean, and bright rooms of the schools; bookcases filled with school manuals; lots of books for the children to read out of school, globes, maps, pictures, figures, children’s games, and many other special things which help the study, all interesting, perfected, useful, and improving. They made me acquainted with the distribution of studies according to years, classes, and age. And then they formulated the request that I should allow the orthodox children to visit the State school regularly. At the same time Mr. Hamilton handed me, in the name of the Government, a written statement of this subject, which spoke as follows:

“DEPARTMENT OF THE INTERIOR,
“BUREAU OF EDUCATION, ALASKA DIVISION,
“*Unalaska, Alaska, July 16, 1904.*

“The Right Reverend BISHOP INNOCENT,

“*Bishop of Alaska, Unalaska, Alaska.*

“MY DEAR SIR: It gives me pleasure to take advantage of the opportunity afforded of meeting you here, to assure you that it will be a source of satisfaction to the Hon. William T. Harris, LL.D., United States Commissioner of Education, and to Dr. Sheldon Jackson, general agent of education for Alaska, if the children under the care of the Russian Orthodox Church in Alaska avail themselves of the opportunity afforded by the United States public schools in Alaska to as great an extent as possible.

“It is satisfactory to note the large number of Russian orthodox children who are now in attendance at the public schools throughout the Territory.

“In order to achieve the best results here in Unalaska, permit me to request your cooperation in securing here the regularity of attendance on the part of Russian children which prevails at Kodiak and at other villages in Alaska.

"With this in view, Mr. and Mrs. William A. Davis, the teachers in charge of the school, and Mr. N. Grey and Dr. A. W. Newhall, the members of the local school committee, desire that the children from the home maintained by the Russian Orthodox Church in Unalaska should come to school day after day during their period of attendance. If it is desired, they can be dismissed at the close of the morning session or at 3 p. m. However, the teachers reasonably urge that it is absolutely essential to good work that the children should be present regularly during their period of attendance. The duration of this period of attendance might be determined upon by the church authorities in charge of the children. I need hardly assure you that the Russian children will be very welcome during the entire term, September to May.

"Assuring you that the Commissioner of Education will always be pleased to receive communications from you regarding education in Alaska, I have the honor to be,

"Very respectfully, yours,

WILLIAM HAMILTON,

"Assistant Agent Education for Alaska."

In answer I said:

"Will you give us the right and the practical possibility to follow the proceedings of the public schools if we give you our children?"

"Certainly," said Mr. Hamilton, "but what way would you choose to realize your intention?"

"In as far as I am concerned," I said, "I should wish, first, to see all my priests being members of the local school councils, like the inspector of the Russian school in Sitka, who is also a member of the general school council of Alaska; second, I should wish myself to recommend for the Government school teachers who are quite trustworthy in our eyes, especially for those localities where the orthodox populace predominates."

"All right," he said, "your first stipulation we shall gradually bring into action together; as to the second, you will have to write to Washington."

Father Kedroffsky, the inspector of the Unalaska school, was immediately made member of the local school council. And presently I was written that Father Orloff, the priest of the Russian church in Michail Redoubt, was invited to be one of the local school committee, beginning with August 6, 1904. For my own part, with permission from the Right Reverend Bishop Tikhon, I wrote later on to the minister of public instruction in Washington as follows:

"THE COMMISSIONER OF EDUCATION,

"Washington, D. C.

"DEAR SIR: During the visit to Sitka of Mr. William Hamilton, assistant agent of education for Alaska, I have had several conversations with him regarding school affairs in Alaska, especially in such villages where members of the Russian Orthodox Church are largely in the majority.

"I understand that it is the policy of the Bureau of Education to work in harmony with the various churches throughout the Territory, and that in native villages the bureau frequently appoints a public school teacher of the same denomination as the church in said village.

"I would respectfully invite your attention to the fact that there are a number of villages in Alaska that have Russian churches, but no public schools. Perhaps the villages of this character where schools are most urgently needed at the present time are Kenai, Seldovia, and Tatitlak, all in western Alaska.

"Mr. Hamilton has advised me to bring this matter to your attention, with a view, if it meets your approval, to extend to the Russian Orthodox Church aid similar to that which the other denominations receive.

"If this plan should meet with your approval, in order that we may avail ourselves of the assistance of the bureau with as little delay as possible, permit me respectfully to nominate the following persons as teachers: For Seldovia, Vladimir Daicker; for Kenai, Theodore Meshakoff; for Tatitlak, Andrew Malakoff.

"It is understood that in these schools all teaching shall be in the English language, and that during the school hours only those branches prescribed by the Bureau of Education shall be taught.

"I desire to state that if the Bureau of Education can see its way clear to assume the salaries of the persons nominated, and provide the text-books, fuel, and light for the schools, that the Russian Orthodox Church will provide the quarters for the schools and teachers.

"Assuring you of my appreciation of the consideration which it may please you to give to this letter, and of my earnest co-operation in the endeavor to uplift the native population of Alaska,

"I am, yours, very respectfully, etc."

TESTIMONY AS TO THE VALUE OF REINDEER FOR TRANSPORTATION PURPOSES.

FAIRBANKS, ALASKA, *April 17, 1905.*

DEAR SIR: I understand that you have charge of the reindeer of Alaska, and as I am much interested in them I desire some information in regard to the Government method of handling them.

Last spring I purchased of Mr. Hendrickson two deer and hired of the natives through Doctor Lind two more, and left Unalakleet on May 1 for a trip across from Norton Bay to the head of the Selawick River and on the tributaries of the Koyukuk heading against the Selawick. I was gone some sixty days, and used the deer for packing as well as to sleds, and am so highly pleased with them that I am desirous of getting hold of some female deer and trying to get a herd established, for I am convinced that with the proper handling and breaking that reindeer can be made the most serviceable and satisfactory animals for use in this country.

I have been in the country five years and have made many trips with dogs and also horses, but since using the deer I have no use for either dogs or horses. This winter I have been across the country from Valdez to Fairbanks and in all the country I have been in I find plenty of feed for the deer. In the country I was in last spring many of the hills are completely covered with reindeer moss.

I believe that when properly broken and introduced to the pioneers and settlers of Alaska the reindeer as a means of transporting supplies and for travel into the interior will prove one of the greatest factors in developing the great mineral resources of Alaska.

I am desirous of getting a herd started and wish to know in what way the Government will aid me in the work.

I am quite well known in the Seward Peninsula and can furnish the best of references. I expect to return to Nome some time in July,

but until that time will be in Fairbanks and vicinity. Should be pleased to hear from you at your earliest convenience. Address me at either Fairbanks or care of E. C. Hill, assistant United States district attorney, Nome.

Most respectfully,

R. W. SILVER.

Mr. SHELDON JACKSON, *Washington, D. C.*

DOMESTICATED REINDEER FOR NEWFOUNDLAND.

NATIONAL ROYAL MISSION TO DEEP SEA FISHERMEN,

St. Anthony Hospital, Newfoundland, .

April 18, 1904.

DEAR DOCTOR JACKSON: Your reindeer accounts interest me enormously. It was most kind of you to send to me your most interesting reports. I do not think that as yet there has been any success with reindeer in Newfoundland, though a Doctor Campbell, of Bay Islands, had one this winter. I hope he has succeeded. I have men in now trying to get me a couple.

I hope you won't think me importunate, but I would very much like to know if there was any possibility of my importing some Siberian or Alaskan reindeer here. I am so very anxious to introduce something less savage than our dogs. There is any amount of Iceland moss, and from your reports I think that the deer could feed all the winter easily. I drive hundreds and hundreds of miles on my trips, visiting the sick in this enormous district, and if I could only get some deer by paying for them, I think I could get the money if it were within reason at all. I would make almost any sacrifice to get a couple. I do not know people in Washington, so I could only refer you to Dr. Edward Everett Hale, now chaplain to the United States Senate.

Yours, very sincerely,

WILFRED GRENFELL,

Superintendent.

Dr. SHELDON JACKSON,

Superintendent Education in Alaska, Washington, D. C.

GENERAL POST-OFFICE,

St. Johns, Newfoundland, June 3, 1905.

DEAR SIR: In conversation with Doctor Grenfell, of the Deep Sea Mission, he referred to your work in Alaska and the extensive use to which the reindeer is put in that country. I feel interested in the matter, as it may be possible to introduce the reindeer into Newfoundland for winter mail service in the northern part of the island, where we now use dog teams.

I would feel very much obliged if you would favor me with a copy of your report and any information that you may have at hand with regard to their cost and maintenance, and their value for other purposes besides that of traveling.

Trusting that I am not presuming too much upon your kindness in making this request, I remain,

Yours, faithfully,

J. J. WOODS,
Postmaster-General.

Rev. SHELDON JACKSON,

General Agent of Education for Alaska, Washington.

GENERAL POST-OFFICE,

St. Johns, Newfoundland, December 30, 1905.

DEAR SIR: I duly received your letter of the 13th with the sample of reindeer moss, for which I have to thank you very much.

The moss is no doubt identical with that which grows in this country and Labrador, on which our caribou feed.

I have forwarded it with your reports to His Excellency Sir William MacGregor, who takes a deep interest in the subject, and I trust that the government will be induced to take some steps toward the introduction of the deer into Newfoundland or Labrador.

Some people are of opinion that our caribou could be trained to perform the same service, but I should judge that, being a larger and heavier animal, it would not be so well adapted for traveling over deep snow.

Wishing you the compliments of the season and a prosperous new year,

I remain, yours, very faithfully,

J. J. WOODS,
Postmaster-General.

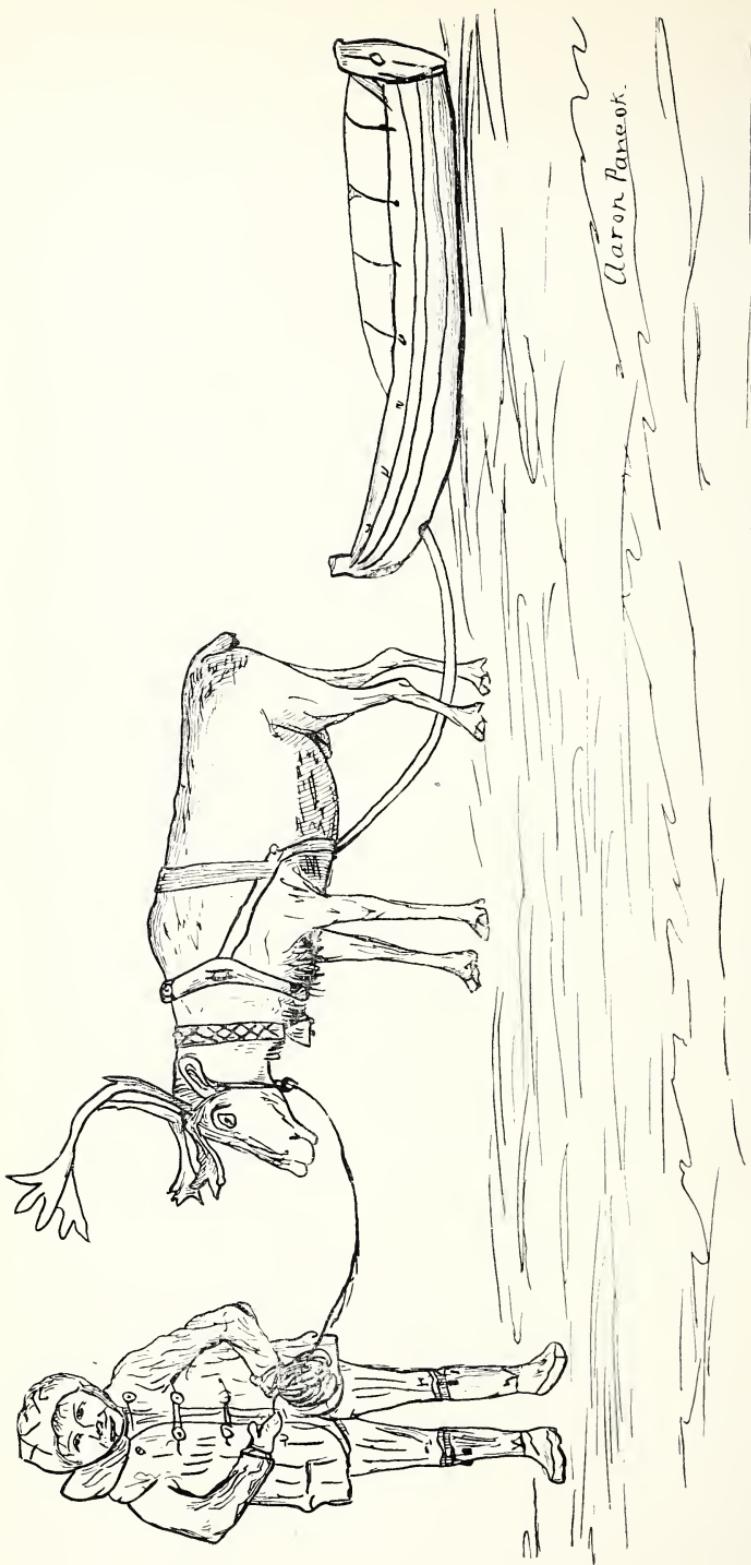
Rev. SHELDON JACKSON,

*U. S. General Agent Education in Alaska,
Washington, D. C.*

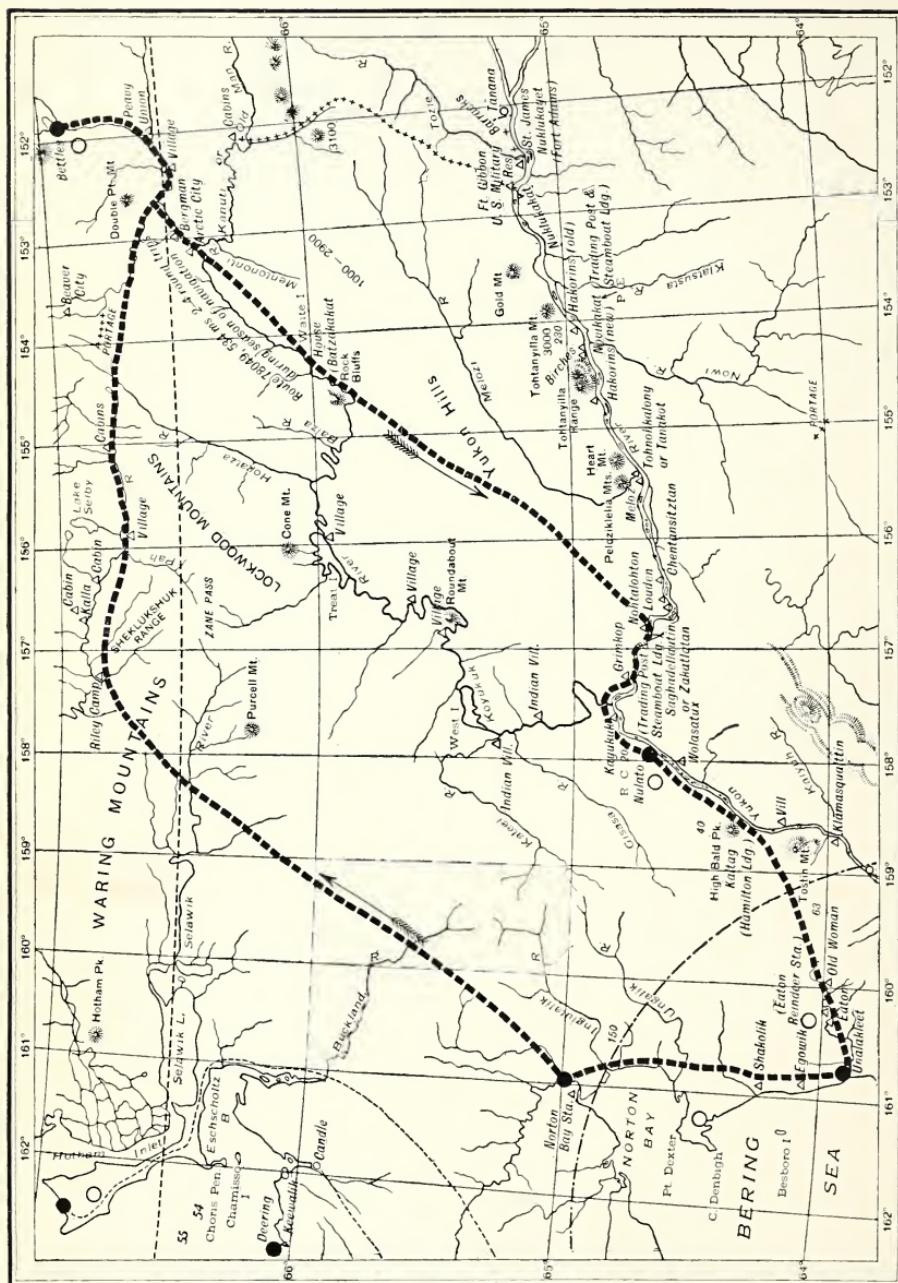
ROYAL NATIONAL MISSION TO THE DEEP-SEA FISHERMEN,

St. Anthony, Newfoundland, May 23, 1906.

DEAR DR. JACKSON: I mean going in for these reindeer, and I am putting up the money myself, as at present I have not been able to move the government. But I think shortly, owing to your admirable reports, I shall be able to do so. Our present governor takes the greatest interest in the question; he is not the government, alas! What I want to know from you is, Where can I get a herder for the first winter, and how much would I have to pay him? I want your advice specially about this, as I see in your reports you get Finlanders



NATIVE DRAWING OF REINDEER HARNESSSED TO PULKHA (SLED), BY AARON PANEOK.



SKETCH MAP OF ROUTE BY DR. CARL O. LIND IN TRANSFERRING A HERD OF REINDEER FROM UNALAKLEET TO BETTLES, TOGETHER WITH HIS RETURN TRIP, 550 MILES EACH WAY.

from Michigan. Do you know anyone from an Alaskan mission station that would come and give us a winter? We are not very rich, being a mission ourselves, but I would put all I am worth into it, for I believe it to be one of the means of redeeming the people. I should have my herd first year on the north Newfoundland shore. I should also be glad, of course, if you could tell me how I could get reindeer, say up to a thousand, landed down here or in St. Johns. That is to say, where you would advise me to buy them. This is with hope of getting others to join. I remember your kindness to me in Washington with much gratitude, and I have read and reread your reindeer reports.

Trusting that I may be able to write to you soon and say that the government is going to move in this matter, believe me to remain,

Yours, very sincerely,

WILFRED GRENFELL,
Superintendent.

Dr. SHELDON JACKSON,

Superintendent Education in Alaska, Washington, D. C.

EXTRACTS FROM THE DIARY OF REV. CARL O. LIND, M. D.

Extracts from the diary of a trip from Unalakleet to Bettles, Alaska, 550 miles with a herd of reindeer, and return, in the months of November and December, 1904, and January, 1905, kept by the leader of the expedition, Rev. Carl O. Lind, M. D., supervisor of reindeer in Alaska, central division.^a

PREFATORY NOTES.

On September 30, 1904, the three Finlanders, who were employed as herders for the Bettles herd, arrived at Unalakleet. At once they were put to work preparing their clothing, such as sleeping bags, packs, skin trousers, etc., and then to prepare harnesses, halters, and sleds. Thus they were fully occupied for nearly a month. J. M. Johnson Losvar, the man who was engaged for Bettles also, but later was transferred to take charge of the Bethel expedition, arrived at Unalakleet on September 29 and reported for duty the same day. He has also been employed in preparatory work for the two expeditions.

On October 25 the mission herd, together with that of Mary and her boys, was corralled and the greater portion of the Bettles herd counted, and let out separately to be taken care of by the Finlanders. It was our intention to have Bahr's herd brought in immediately to finish the

^aThe author is a Swede by birth and his English, it will be seen, retains some Swedish idioms and grammatical forms which it has not been thought necessary to change.

counts for Bettles herd and also to separate the second herd, the one for Bethel, at the same time; but because of too weak ice on the Egowik River it could not be brought to the corrals; and as the temperature remained rather mild two weeks following above date, we finally decided to prepare new corrals on the north side of Egowik River and there count the balance of Bettles herd and all of the Bethel herd. On November 5, in company with Johnson, I started for the new corrals at Egowik, and in the evening of November 7 the count was finished successfully and the herds driven in their respective directions so as not to intermingle again. Bahr's herd, which was to remain, was taken to the northeast a few miles off, while the balance of Bettles herd went southwest to join the first portion, taken from the mission herd on October 25, and which during the same afternoon had been driven across the river and up along the coast toward Steamboat Cabin. The Kuskokwim herd crossed the river and marched directly toward Unalakleet.

Because of the lateness and darkness of the evening when the work was finished we could not then go home, about 18 or 20 miles, but had to wait until the next morning, November 8. Bahr, Johnson, and myself arrived at Unalakleet early in the afternoon that same day and at once we began to pack our provisions, etc., so as to be able to leave again on November 9. This, however, gave us entirely too limited time for all the little things which remained to be done before leaving, so it was decided that Bahr and I should stay at home until November 10 and see that the Kuskokwim herd was safe over Unalakleet River also before we left. So it was done. In the evening of the 9th the herd managed to cross the river successfully, and having all orders ready for Mr. Johnson and companions, who would leave also in a couple of days, Mr. Bahr and I, in company with Moses, an apprentice, took farewell of our loved ones and began the long and tedious journey toward the north.

Thursday, November 10.—The seven sled deer with which our journey to Egowik was to be made were brought and hitched up on the tundra just north of Unalakleet village about 9.30 o'clock a. m. Some photos were taken and a final farewell and a "The Lord be with you" heartily exchanged, whereupon Bahr, Moses, and myself, with our seven deer and heavily loaded sleds, began the journey about 11 o'clock. Poor sleighing, uneven trail, overflows in creeks, and heavy loads all tended to delay and make the travel hard. Consequently it took us nearly eleven hours to travel the 20 miles from Unalakleet to Egowik Reindeer Camp. In crossing Egowik River, and also one of its tributaries, we got into 5 to 6 inches of water. What made it specially disagreeable was the fact that none of us expected any overflow and so were not prepared with any water boots. It was our good fortune that it was mild weather, so that by running we were able to keep

warm and comfortable until camp was reached. A cup of coffee, butter, and bread tasted better to me during this nightly hour, 12 midnight, than ever before. The reindeer I drove is a most excellent one; calm and steady, it can be left loose anywhere to feed while we cut our way through brush, etc., in the creeks. Still, it is to be left behind to-morrow and another has to be taken in exchange. We retire shortly after midnight.

Friday, November 11.—The whole day has been bright and beautiful and perfectly calm. The thermometer registered zero both in the morning and this evening. Breakfast was partaken of at 6 o'clock.

The sleds with which we had begun our journey were already in need of repair, because of the rough trail of yesterday, so Bahr and I were working at them while the herd was brought to within a mile or so from camp.

Three new sled deer were lassoed, and when all was ready it was noon. Mr. Bahr prepared dinner very quickly, and at 2 p. m. he, two boys, Avogook and Bigangan, and myself started out in search of the Finlanders and their herd. Night came on us and we could not find the ones sought, so we had to make our first camp at 5 p. m., a mile and a half or 2 miles off from a place by name Steamboat Cabin.

At 4 o'clock we reached an old camping place from which the Finns must have gone to-day, because there was yet fire in the ashes where the tent had stood. Near the same place we found, just accidentally, a large, fat sled deer which I had traded for the trip. It had formerly belonged to Okitgon and was known as one of the best sled deer in that herd, but now it is useless. Somehow it has become sick, the front legs are paralyzed, and it shows signs of dizziness to an extreme degree. Yesterday, when taken from the herd by Jensen, the boys declare it was well and strong as ever. This looks as though it had been cruelly handled, but as we are anxious to go on there was no time to stop for any special investigation. For that reason I gave the boys instruction to bring it back on sled to the reindeer camp and there let Klemetsen, Mr. Bahr's father-in-law, examine it to see if he could understand what had happened to this our so-well-needed animal.

The fact that the deer was staked out in the condition it was, and in a place where, had we not accidentally come that way, it might have had to starve to death if the injury was not killing per se, and no word sent back to other herders in regard to the matter, speaks very unfavorably as to the humane feelings and qualifications of herders.

The creeks are all overflowing, causing us considerable trouble in crossing. One creek had to be spanned by a bridge before it was possible for us to cross it. The deer very readily step into the water, if we let them, but it is we ourselves and our loads which get all wet, and that has, of course, to be guarded against. Retire at 9 o'clock.

Saturday, November 12.—This has also been a most beautiful day. It has been calm and clear. The thermometer registered zero this morning, but to-night it is 10 below. We broke camp at 7 o'clock and at 9.30 a. m. we reached the Finlanders' camp, which was located about 2 miles north of Steamboat Cabin. After a short stay there and a luncheon of coffee, bacon, and bread, we again prepared for moving onward. At 11 o'clock this latter camp was also broken up, the sleds packed, and a train of 17 driving deer with so many sleds and pulkhas was strung out and began a steady march up the mountains over which we were to reach the tundra south and east of Shaktolik. Raisanan, Sara Strong, and I followed the herd, and with the help of Aslak and Rani, two Lapp dogs, drove it onward.

We were also provided with axes so as to prepare a trail for the teams through the brush when such were encountered. Ole Bahr, Jensen, Bigongan, Avogook, and Kaktoak followed the teams. No special trouble was encountered until we had passed the summit and were well advanced on the descent to the tundra; there we ran into an extensive stretch of alder bushes through which it was really difficult to pass. All men at work, we prepared our way nearly to the foot of the mountains, and so are out of the heaviest brush and ready for advance to-morrow morning. Camp was made at 4.30 p. m. At 6.30 our supper was over, and after that everybody in camp is busy with something. Bahr and Avogook are mending harnesses and tug lines all they can. It is fearful how all these things wear and tear because of the little snow we yet have. If the same condition continues I fear very much that our supplies will soon give out.

The Finlanders, Strong and Johnny, are living next door to us to-night. They are busy repacking their provisions, etc. All are happy and well. To my inquiries in regard to the sick deer of yesterday, it was answered that it was sick when taken from the herd. Bahr and I have also written letters home to our wives this evening; the same to be brought by Bigongan and Avogook, who both are to return in the morning.

Sunday, November 13.—Takomanal River at 6 p. m. After a most pleasant day did we camp at 3.30 on the river named, which is a tributary to Shaktolik River and only a short distance off from the river into which it empties its water.

Our intention was to go on to Shaktolik River this evening, but, the sun just setting, all men tired from the day's march, and several harnesses broke, we concluded that it was better to stop and repair things for to-morrow. In spite of all our efforts to get an early start this morning we did not get away until 9 o'clock. This was due to the many extra things which were to be tended to, exchange of deer, etc. Avogook and Bigongan returned to Unalakleet. Then we encountered a lot of trouble in crossing a little creek. The deer stampeded back to

the hills, and thus delayed us another hour and a half, and sleds and harnesses suffered material damage at the same place because of roughness of trail. We have traveled well for the time, but on such short days one can accomplish comparatively little. We are all well and in good spirit, excepting the Finlanders, who are thinking they have to walk too much. But as sleighing is bad and sled deer limited in number we have all to walk, and it ought not to be worse for one than the other. It is now growing considerably colder than it was when we left home. This morning it was 12° and to-night it is 25° F.

Monday, November 14.—It has been a most beautiful day, clear as a November day in this high latitude can be. It has also been quite cold. The morning began with 25° F., and to that a gentle north-easterly breeze, which gradually increased in strength till noon, and then it became perfectly calm. Not having much trouble in crossing Shaktolik River, we were on the north side of it at 10.30 a. m., and at 3.30 p. m. we camped at a sufficiently safe distance from Bonanza, safe in regard to dogs. The evening is also beautifully illuminated by both moon and stars, but the thermometer registers 26° . A sharp breeze from the north sweeps over the tundra and penetrates everything in its way. Still, we are quite comfortable in our tent beside the stove, which one man is almost constantly watching. The distance traveled during the day is about 15 or 16 miles. Somehow a few reindeer have found out to-day that we have dry fish in our sleds, and now we can not keep them away from our camp. They come and paw on sleds, trying to scratch off sacks and sled covers so as to get at the contents. This evening we had turned sleds and pulkhas, which contain fish, upside down, and the deer are now hammering away out there like carpenters in hope of reaching a piece of dry salmon. The deer which I drove to-day is quite a fighter. Often, when driving, one walks ahead, leading the deer, and so did I at the same time as I helped to drive on the herd, but my beast evidently did not like that, because at several times he took a pleasure in taking me on his horns. One time, before I knew of that favorite trick of his, he succeeded so well that he tore my parka so badly that it has taken me all evening to mend it.

Tuesday, November 15.—This day has not been fully as bright and clear and free from mishaps as the previous days. In the first place, our night's rest was disturbed by the reindeer. Hardly had we retired before, eagerly searching for dry fish, quite a number of deer came around our tent. A fight was the result, and it again resulted in the tearing down of our temporary habitation; and my thermometer, which hung on a small spruce near by, was shaken down and trampled under foot. A wonderful thing is the fact that it was not broken, but that it yet serves its purpose.

As soon as daylight came the sled deer were looked after, and the

sad fact that one of our best driving deer lay there dead and stiff was then learned. Of course we could not delay for the sake of a dead deer, so as soon as possible we plodded on our way. One of the remaining deer had to pull two light loads because of the death of the one during the night.

After 4 miles' travel we reached Bonanza Beach Road House, where Mr. and Mrs. Kriek reside. It was decided to cross the Unaktalik River near its mouth and close to the above-mentioned road house, but the dogs are always a source of constant fear when traveling with reindeer. So that to prevent accidents Koktoakwe went to the Eskimo village while I ran fully a mile ahead of the herd to the road house to have all dogs chained up. Before the herd reached the place I had a cup of coffee, butter, and bread, and then joined the herd as it passed. To-night our camp is located on the beach of Norton Bay, 12 miles above Bonanza.

The morning was bright, with a sharp northeasterly wind blowing, but the thermometer registered only 18°. At 10 o'clock a. m. a heavy fog came up, making it very dark and disagreeable. The same wind continues to-night, but it is only 4° cold. It looks really as if we were going to be favored with a snowstorm just now. We all hope it may come. Our stove, like everything else, has already suffered very serious damages because of the rugged trail. Really, if this continues, it seems almost an impossibility to reach Bettles with our equipments.

Wednesday, November 16.—The morning was dark and snowy, and the same weather has continued throughout the day. Before 4 o'clock this morning I was up trying to get the fire started and breakfast prepared. It begins really to be a hardship now to cook, because of the stove being so much damaged. At 7.45 a. m. we began our onward march, but the road was much like unto that of yesterday, very trying and difficult. Dozens of little creeks had to be crossed, and one of them measured at least 40 or 50 feet in depth. The sides are very steep and rugged, and partially covered with alder and willow bushes. That it is hard to get down and again up such places is a self-evident fact which need not be stated. Sleds, harness, tug lines, and all, break and tear almost beyond our power of remedy. It would have been possible for us to have gone a few miles farther this evening, but about 2 o'clock we saw two reindeer a mile off from our trail.

Having previously heard that some driving deer had been caught by a native, I thought that these must be the ones. So Bahr and I walked to the two deer to see to whom they belonged. Tatpan's mark was found on both of them, and Bahr knew them to be two out of ten driving deer A. A. Bahr from Candle bought from the herders at Unalaklik, January 1, 1904. The next task for us was to find where the Eskimos lived. It was hard because of the thick weather. For

about an hour we trudged along before we found any sign of human habitation. When once we found the village, Iglutalik, it was an easy matter to find out the truth concerning the deer. A young boy had been out hunting sometime last summer and had then found these two deer, which he had then taken and kept without notifying the herders or anybody at the station about the matter.

All the natives of the place were gathered and given a friendly warning never to interfere with any domesticated reindeer which did not belong to them. It was also decided, to the benefit of the owner, that we take the deer with us and notify at our earliest convenience the party who bought them that he, or the one to whom he might have sold them, can again get his property.

As our harness and tug-line material had from home is now all used up and the same condition of trail continues we dare not leave this village, the last we see for probably 200 or 300 miles, without having some more. For the price of \$4 one large loftah skin was soon made mine, and then Bahr and I began our tramp back to camp. Not knowing where our party had finally decided to stop over night, we had to go back to where we parted and then to follow their trail until we again met.

Hungry as a bear, supper did taste unusually well when prepared and partaken of at 7 p. m. A tramp of twelve or thirteen hours without food or drink is enough to develop a pretty fair appetite. Koktoak and Johnny have now gone after the two deer mentioned above, so as to have them with the herd to-morrow. Bahr is making halters as fast as he can, while I melt snow for water at the same time as I write these lines. Just think of it, being camped on a big river, Iglutalik, and still have to use snow for water. The reason is that the tide goes up so far in the river that not only the water but also the ice gets salty.

The temperature this morning was 10° F., and it is the same to-night. It has cleared up this evening and looks as if it were going to grow colder. No wind of any kind.

Thursday, November 17.—We have had a most glorious day to-day. Breakfast was prepared at the same early hour as usual, and a little before 8 o'clock all was ready for our departure. Then the herd had taken to the mountains and gone so far that it took another hour before it reached the trail. The teams went ahead when ready, so they were quite far when finally the herd arrived. As I always either follow or go ahead of the herd, I went on to meet it and then followed after the teams until in crossing a place on Iglutalik River we overtook them. The river banks were steep and high and gave us much trouble to get down. One of the pulkhas broke to pieces and the load from it had to be divided and taken on several other sleds. The herd was also quite hard to get across the river; because of glare ice

a good many of the females, especially, refused to go, and so stampeded back again in the direction from which we had come, so that to get those joined to the balance of the herd once more we had to let a large group of the ones that had already crossed go back and then try to cross in another place. The whole performance took us probably an hour and a half.

The trail has been better to-day than we have hitherto been accustomed to have it. No deep or overflowing creeks have been in our way, and the snow seems gradually to be getting deeper the farther north we come. Our course is directly north from Ungaktalik Mountain, and will so be until we reach Koyuk River. The temperature this morning was 20° below and to-night it is only 18, but instead of the two degrees we have a northerly breeze which more than makes up for it. Our wood supply for to-night and morning is quite limited, since there is not a stick to be had but what we have brought along on our sleds all day. Still we are quite comfortable.

Just as I wrote the last line a terrible noise was heard in the small willow bushes outside our tent. Upon investigation we found that one big male deer had come around the Finn's tent, evidently looking for fish, and gotten a large empty pulkha entangled by rope unto his horns and could not get rid of it. So he got frightened and tore about like a cyclone through the 3 by 4 feet high brush and off toward the herd in the wildest excitement. Koktoak is now out looking after the sport to see if he got rid of the pulkha before reaching the herd.

Our neighbors, the Finlanders and Bettles Eskimos, are fast asleep long ago. This moment, 7.30 o'clock, Koktoak returned and reported that he found the pulkha. And after our thanksgiving for the success of the day we will also crawl into our sacks, where we care very little what wind blows.

Friday, November 18.—The Lord in His mercy has given us another most beautiful day. Camp was left at 7.30 a. m., and, at 3 p. m. we were obliged to make camp again, probably 14 or 15 miles nearer our destination. We traveled very well all forenoon, but at 12 o'clock noon we were caught, as it were, in a trap. We came into creeks and gulches filled with brush and small spruce to such an extent that we had to cut our way for a distance of probably 3 miles. Having done so we finally came to the bottom of a gulch, from which it will be easy to gain access to the hills in the morning. To-night, however, it was too late to go any farther. Our camp this evening is comfortably located in a small patch of spruce. Fuel is also plentiful. The temperature was 12° this morning and so it is to-night. A northerly breeze has been blowing all day, and really we have had all that we possibly could do to keep from freezing. While loading his sled, Jensen froze the little finger on his right hand. Our course has been

northerly, and to-night we are camped on a small creek tributary to the right fork of the Koyuk River.

Saturday, November 19.—Before 4 a. m. I was up firing and preparing breakfast. At 5.30 the sleds were all ready, when a sudden change took place in the weather. It remained so dark that we could not see to gather the herd and travel until shortly before 8 o'clock.

Billy Strong had been sent an hour and a half earlier to pick and prepare a trail for the herd and sleds. Our anticipation of trouble in getting through brush and timber proved to be correct, because hardly had we traveled 2 miles before we, of necessity, had to plunge right into a forest of alder, willows, and spruce mixed, over half a mile wide.

Strong had not been able to clear more than half of the way before the rest of our party arrived. Then I, being ahead of the herd, had to join in the clearing of road and after another half hour the job was finished, the herd through, and also the teams. The snow is getting heavier right along. The snowshoes have had to serve for the first time on this trip to-day. This evening we are camped on the Koyuk River just at the junction with one of its tributaries. For a while I was in considerable doubt as to whether we are to travel up said creek to the east or if we shall continue to go farther north along the main river. However, after a thorough study of the map and a reconnoitering tour to the adjacent hills, it was decided that we take a northeasterly course from here.

The whole day has been dark and cloudy. In the morning it was still 12° , but to-night it is at zero again. It is trying to snow this evening. An easterly wind has been blowing all day until in the evening, when it changed to the west.

Here is moss, where we stop; but it is not as large as we are accustomed to have it. The reason is that the ground was burned some years ago.

Sunday, November 20.—A day of rest and quietude. Breakfast was prepared as early as usual, but then it began to snow and blow so hard that we concluded to stay where we were and have a day of rest.

The deer were moved early in the morning, so as to have feed in abundance. And we ourselves have really rested, so as to be in a good condition for to-morrow. Shortly before dark Mr. Bahr went out with his gun and brought back six spruce chickens, which we enjoyed for supper. All the Eskimos, Mr. Bahr, and I read a portion of the Bible together and had a prayer and thanksgiving meeting. The rest of our traveling companions do not seem to enjoy such things, so they do not join us.

The wind has been easterly until near evening, when it changed toward the north. The thermometer has registered 20° above zero all day.

Monday, November 21.—Shortly after 3 o'clock this morning I was up preparing breakfast. At 5 o'clock the morning meal was over, and two hours later the teams were all ready to pull away toward the northeast.

Sara, Raisanan, and Strong had long since gone to bring the herd around into our course. When all was ready we started our onward march with the teams, in the hope of soon joining the herd, which by that time we really expected to be within our course and not so far away either. After a couple of miles' travel we stopped, looked, and listened—no deer to be seen or heard; again we traveled slowly a short distance and stopped. There was plenty of moss, so the sled deer enjoyed the halt quite well. Bahr and I, feeling uneasy about the herd, made short excursions to neighboring hills to see then if we could not find out where the lost ones were. After an hour's waiting they came from the north, and all joined. We traveled well until our road was entirely obstructed by brush.

Recourse was then taken to the creek and upon it we did well for a few miles—6 or 8—until the overflow got to be so bad that we had to get ourselves off the ice again. The first hill we came to on the right-hand side was all burned, and just then, as we all stood, having council as to the best way to take, the clouds lifted a little and we could see the dim forms of a very high mountain on the north of the river, and by a creek, the mouth of which we had passed. All hills visible were densely covered by a forest of spruce, willows, and alder, intermingled. An attempt to go through these forests would mean an extreme amount of time and labor. Due to the scarcity of moss on the recently burned hills, we determined to go back about a mile so as to gain access to the other, north, side of the river, where there was plenty of moss and a good place for camp while we had time to find out the best way to travel. As soon as the herd and all the teams were back to good feeding ground and camp located, I, on snowshoes, started off for the highest mountain in the vicinity—that one seen from the burned hills south of the creek.

The task was quite a difficult one and took me fully two hours to accomplish. But if it was hard I was fully recompensed for the trouble, in that upon reaching the very summit the clouds scattered for a few minutes and as the sun cast his last rays from the southwestern horizon I could see the dim outline of the divide between Koyuk and the Buckland River valleys. It was also possible to see and pick out a way directly to the northeast from our camp. It seems as if it would not be so very difficult to come through the forests and upon the mountain ridges, where we with preference travel.

Camp was made at 1 o'clock. At 5.30 p. m. I returned from my reconnoitering trip pretty well worn out. On my way home I broke through the thin ice on an overflow and got down into nearly a foot of

deep water. This accident would not have happened, but it was dark and the light snow of the day sufficiently covered the thin ice and shielded the danger. So with the nearly 6-foot long snowshoes tied to my feet I came down through the ice, and not able to get rid of the snowshoes in a hurry the greater portion of my body came into rather too close contact with the icy water to be real comfortable.

About a mile-and-a-half walk with icy snowshoes and stiff-frozen clothing brought me to the camp on a bar in a tributary to Koyuk River, where I am drying now. Oh, this is a palace! Bahr had prepared bacon and beans for supper, and better beans I have never tasted. The thermometer registered zero all day; no wind. * * *

Tuesday, November 22.—A bright and beautiful day, with a light northerly breeze. Temperature was 10 degrees this morning, but to-night is only 6 degrees below. Camp was broken at 7.30 o'clock this morning and again made at 3.30 p. m.

Our course has been northeast, along the mountains, as I had picked the trail last night. True, at times we have had to change direction quite materially so as to get around gulches which are fearfully deep and steep. It is beyond question to attempt anything else but, with due respect, walk around as long as it is possible.

The divide between Buckland and Koyuk is coming nearer, or rather we are coming nearer it. To-night we are camped high up on the mountain side in a little patch of dwarfed spruce. When everybody else was ready to start off this morning Koktoak was not ready, so we went on ahead and when we had reached the top of the mountain I ascended yesterday, he was not to be seen anywhere for 3 or 4 miles' distance. As we dared not go any farther before Koktoak came, a fire was started on the hillside, with which we kept warm until after two hours waiting, he arrived. Nothing was wrong except the usual trouble of sleds rolling over and running against trees and bushes, etc. * * * Being at that time above the timber line the trees have not bothered us during our afternoon travel.

The snow has been knee-deep nearly all day and the herd really began to show signs of fatigue this afternoon.

Wednesday, November 23.—Breakfast was all over at 5 o'clock and at 7 o'clock the sleds were packed and the deer harnessed for the day. Jensen had gone ahead on skees to look for the best road around or over a very high mountain which lay directly in our way. It may here be stated that we had bright moonlight. At 12 o'clock, having traveled about 10 miles, we came, as it appeared to us, to the very last mountain range which forms the divide between Buckland River and the Koyuk. Now knowing that probably 15 or 20 miles lay between us and the next camping place, we could do no better than to stop in a patch of dwarfed spruce in a gulch on the southern side of the divide. To-morrow we have to try, if it be possible like this morning, to make

use of the moonlight so as to be able to reach the Buckland timber. The weather has been most beautiful all day. A very gentle breeze has been wafting our faces during our onward march. The temperature was 5° below zero this morning and to-night it has fallen to 12° below. Perfectly calm to-night.

Although being on top of the mountains, the sun has been visible only four and one-half hours. It is impossible to accomplish much in such short days. We are all well at camp, and happy over the fact that we are soon out off the trap into which we seem to have come on the Koyuk.

Thursday, November 24.—This has been an extraordinary day for several reasons. In the first place, it has been a day of unusual length. Breakfast, consisting of mush, bacon, and beans, was enjoyed at the hour of 4 o'clock this morning. At 5 o'clock the herd and the whole caravan of teams were moving along the steep ascent of one of the largest mountains between the Koyuk and the Buckland valleys. Four hours did we travel by moonlight and for other four hours by direct sunlight, which makes the shadows as long as the age of Methuselah. At 3 p. m. camp was made, no more on Koyuk but on the Buckland River. From the summit we could plainly see across the Buckland and also the tundra north of it to the Silawik Mountains.

It was a beautiful scene indeed to see that snow-covered low-rolling country, streaked here and there by a black line of timber in the sunny November day. It is one large basin bounded in the south by the Koyuk divide, north by the Kobuk, east by Koyukuk and the Silawek gigantic mountains, while the less high divide between Buckland and Sewalik forms its western boundary.

About 1 o'clock we made a short stop for the deer to eat a little, and just as we were again ready to march forward some one in our party noticed a black object moving in the same direction as we were going but $1\frac{1}{2}$ or 2 miles behind upon the mountain slopes. It did not take us long to recognize a man in the moving object. * * * The whole party stopped while I walked back to meet the one coming. Upon his approach I found an Eskimo with a bundle on his back. He had been out for a few days trying to hunt caribou, and having heard our voice was curious to find out who we were and whither we went. So he, with his pack on the back, started off as fast as he could go over the snowy wastes.

Akenarak—so is his name—lives on the Buckland only about 10 miles from our camp to-night. He stays by us over night to show us the best way through the timber to-morrow. The snow is getting deeper and deeper, for every day we get farther north. It is really beginning to be difficult to travel because of it. My snow shoes, which are unusually heavy, have eaten the skin off from all my toes to-day. I do not understand how I shall be able to walk to-morrow. We are

all enjoying health and the fresh air immensely. The deer, however, do not seem to enjoy the deep snow which is now encountered. The thermometer registered 14 degrees this morning, but to-night it is again near zero. The heavens are covered with dense clouds, as if another snow storm were coming. The wind has been easterly all day.

After our little Bible reading and prayer we are ready to retire at 8 p. m.

Friday, November 25.—This day has been one of the hardest I have experienced in the line of work. At 6 o'clock our Buckland native, Johnny, and myself, accompanied with a good ax, each started for the woods to make a trail for the rest of our party and the herd, which were to come after when sufficiently light to travel.

The weather of to-day has been just the opposite to that of yesterday. Both the moon and the sun have been hidden from view by the thickest of clouds. Snow has fallen all day, but not very heavily. For 5 or 6 miles we had to cut our way through thick forest of spruce and a lot of underbrush.

Raisanan, Sara, Koktoak, and Strong, who were to drive the herd, had received instruction to wait until the trail was clear. But instead of doing so they had begun the drive too early, and within two hours they had reindeer scattered all through the woods. Until 1 o'clock p. m. no change in the programme. The snow was more than knee deep, and then, with the thick forest through which to cut our way, the task was really intensely hard. But at last, shortly after 1, we were again on the open tundra. We did not, however, reach our desired camping place until 4 o'clock—one hour and a half after dark.

We were all extremely tired and hungry and wet through and through, partly from perspiration and partly from the snow. This evening we are camped on another branch—the middle—of the Buckland and are really comfortable. The big Silawik tundra lies now open before us to the north, and we are assured not to have to do any more woodsman's work on our way. Hope it is so. The native we met yesterday, and who has to-day been our pilot through the woods, lives right by our camp. Six young Eskimo men have just been in to see us now. We read John, third chapter, and had a prayer meeting together. * * *

The temperature has been $+15^{\circ}$ to-day, but this evening it is falling to zero. It is also clearing up under a gentle northeasterly wind.

Saturday, November 26.—We have been favored with the most beautiful weather to-day. At 7 o'clock this morning camp was broken, and an hour later all of us were gathered about the herd to see, if possible, that none of its members were missing from yesterday's march through the woods. As far as we are able to determine they were all present, so our day's journey began. Eleven o'clock we

crossed the third and last as well as the largest branch of the Buckland. At that place we took a small quantity of dry wood along for a night which we expected to spend on the barren tundra. Our afternoon's journey has been quite successful, considering the fact that several small creeks filled with brush have been in our way.

Illerajaurak, a son of the native we met on the mountains, was hired to pilot us across the last branch of the Buckland, so as to save time. Illerajaurak has a strong desire to become reindeer herder. I hope also that he may be remembered when there is an opportunity for another apprentice at Unalaklik. It would be well to have a representative of the Buckland natives also.

This evening our camp is located in a little hollow on the Silawik tundra. Some small willow bushes, large enough to which to tie our tent, are our only shelter. For supper we had some ptarmigans, which Mr. Bahr has been picking from off our trail the last two, or three days.

Two female reindeer got into a fight this evening and got their horns locked so that we had to lasso them both and cut off their horns to get the two combatants apart. As far as we know neither one of the two sustained any injury, although it could easily have happened at such a time.

The snow is deep and like sand; consequently it is very heavy to travel.

The so-called "niggerheads" have grown to a remarkable size at this place, and also make travel extremely burdensome.

The sun was bright the short time he showed his face above the southern horizon. The morning temperature was 6° below zero and to-night it is 8° below. A light northerly breeze has blown all day.

Sunday, November 27.—Our night's rest was much disturbed because of a very strong northeasterly wind, which started to blow quite early in the night. Three successive times did our stovepipes blow down during the night, and naturally made a terrible racket. I had just started the fire and was frying pancakes as fast as an inexperienced cook can do when they blew off the last time. As yet the weather was clear, but the snow was drifting quite hard. Of course, we knew full well what it meant, so as hurriedly as we could all were ready for a move. Before 7 o'clock we were off, but had not traveled more than about half a mile before the necessity of pursuing a different method of driving the deer than that which we had hitherto practiced presented itself. One man had to walk ahead on snow shoes and lead one deer so as to encourage the others to come along and keep in a bunch.

Instead of diminishing, the wind increased in strength every minute, and soon the whole heavens were covered with clouds. As our course was slightly to the north of northeast, we had to face the wind exactly and had the full benefit of the same. It was fierce, although the ther-

mometer did not show more than zero. Occasionally we have been able to see the shadow of the mountains for which we are destined, but then again they were hidden from our view by the blinding snow and wind. We all kept close together and moved on very nicely until 4 p. m., when, hungry and tired, we came to some willow bushes in a hollow, which afford some shelter from the wind. Here is excellent moss for the deer, and we ourselves are all right if we only have a little wood with which to cook a little food. But somehow the green willows do not do very well, especially as our stove is very defective. I have been sitting by the stove, constantly watching and trying to keep the fire going for an hour and a half, and yet the water for coffee is not boiling. Mr. Bahr has now taken my place by the stove while I write these lines, so as to be ready to creep into the sack as soon as supper is over. The wind is blowing fiercely, and it is very dark to-night. Jensen was just in and complained about the fact again that they had no more flour and no bread, and that other provision was also running low. Discouraging indeed! The snow is very deep.

Monday, November 28.—After 9 o'clock last night the wind began to calm down, so that we had quite a restful night. This morning it was so very cloudy and snowy that not the nearest hills were visible. Still, we started off between 7 and 8 o'clock, or as early as it was possible to gather and keep the herd together.

Our course was taken the same as yesterday, but soon I found that Strong, one of the natives from Bettles, who is now supposed to serve as our guide the remainder of the way, turned toward the east. Thinking that he knew the hills, which occasionally could be seen like shadows in the mist, I said not a word. We traveled well for a whole hour, but then he thought himself lost.

So the compass was consulted, and to regain our true course we took straight north for an hour, and at that time we had reached a good-sized river which we followed downstream for possibly a mile. Then we found tracks of dogs and sleds and several men who had gone back and forth along the river. There were just as many tracks in one direction as the other, and we could not determine for sure which direction was the nearest to where people lived. The Eskimos were inclined to go upstream while we white men believed in going downstream, and the latter inclination was acted upon. The course of the river was northwest, and as we traveled well we must have made at least 8 or 10 miles until 12 o'clock. The thought that we certainly must be near some human habitation so strongly possessed some of us that we decided to stop at once and find out exactly where we were, until the weather became more favorable for traveling. It has been blowing and snowing fiercely all day until 1 o'clock, when it began to brighten a little. At once Strong and Johnny were sent up on the hills to see if they could recognize the country.

They returned with the information that they thought they knew where we are, but they are by no means certain. It is now 7 o'clock p. m. The same two natives have now been down the river and say that about $1\frac{1}{4}$ miles down is Kaveran's place. Kaveran is an old native trader who has lived there many years and is widely known as the "Silawik Chief No. 1." So by this camp we have come to the end of our finding the way by means of compass and chart. The two natives, Strong and Johnny, are now, they claim, competent to pilot us through the remaining distance without these instrumental means. Hope that it is so.

The river upon which our camp is located to-night is called Kavalek (knee pants) and is a tributary to the Silawik River. To-morrow we will continue our way down Kavalek River, by Kaveran's, and then make a portage over to Silawik in a northerly direction.

Ole Bahr has been suffering from cramps to-day, so after coming to camp he has been in the sack while I have tried to fix him up as well as my means allow. I also fell on the ice this noon and hurt my right knee quite badly, and had to sit here this afternoon with snowy compresses about it. The rest of our party are well, but the Finlanders always complain about their heavy walks.

The thermometer has shown and still does show only zero, but the wind makes one feel as if it were many degrees below. The snow is very deep and tiresome.

Tuesday, November 29.—It is now 6.30 o'clock p. m. Supper is over and Mr. Bahr is now washing the dishes. Koktoak is out feeling for a little more wood for the morning—I say feeling, because no one can see anything in the arctic night unless illuminated by the moon or aurora—while I am making my reflections over the happenings of the day.

Camp was lifted at 8 o'clock this morning. The late hour, however, was not due to our slowness, but to the fact that the herd had to be brought down from the adjacent mountains to the Kavalik River, and in so doing it had to go through a lot of brush which, of course, delayed quite materially.

After half an hour's travel downstream we arrived at the noted Kaveran's place. We stopped there for nearly an hour while we received the information necessary for making the shortest and best way over to Silawik. I also had to buy a sack of flour at the price of \$6 for the Finlanders and the two guides. Mr. Kaveran made me a present of a stick of grayling. When the natives catch the fish, they take and put a stick through the gill openings of the fish and place them thus side by side until the stick is full. Then they are left to freeze so that it becomes almost one solid piece a couple of feet long and the width corresponds to the length of the fish. As a rule there are 20 fishes on one stick, thus prepared.

Just after leaving Kaveran's, going downstream yet, Mr. Bahr saw a rabbit in the bushes, and in a moment it was killed by his well-directed shot. We have just now feasted on its meat. One of the sad things of the day is the fact that the female dog, which we brought along to stay with the herd at Bettles, was suddenly taken by convulsions as we traveled along. I, being ahead of the herd, was at once called, but the wind being strong from the side I did not hear the call at first. When they finally succeeded in getting my attention and I had time to return to the place, the dog had fallen and nothing was left to do for its recovery. Only a few moments and she was dead, evidently from having eaten poison which had been set out for foxes or other fur-bearing animals.

From the sad accident we have learned that it is dangerous to have the dogs loose, so the remaining, the male dog, was tied at once and will have to remain so until we are out of the range of trappers. One second unfortunate happening of the day is the fact that a female deer two years old, when walking along the river side, was suddenly startled and ran. As she was a little to the side of the herd the drivers noticed at once that she was hurt. The inner hoof of the left front foot was cut clean off. Evidently she had been caught in a large iron trap, which had been set for foxes. The deer really shows signs of suffering and walks poorly. It is doubtful whether she will be able to travel on much farther. The wind has been easterly all day. It has been strong and cold as ice. The thermometer showed 5 degrees below zero this morning and to-night it is a trifle lower. Jensen suffers from the same ailment to-day as Bahr did yesterday. My injury to the right knee, which was sustained yesterday, has caused me quite a little suffering.

At places we have been bothered by overflows, but they have not been worse than it was possible to pass. The snow is now rapidly getting less again. The hills are almost bare as far as we could see ahead of us before dark. This evening our camp is located on the tundra a mile to the north of Kavalek River, on a portage of many miles to the Silawik. The fresh grayling which I got from Kaveran prove to be a source of great temptation to some of the reindeer. At first I had put them under a sled outside our tent, but they had not been there long before a big crowd of deer surrounded the tent and to save it and the fish both, as well as to guard against accidents among themselves, we had to take the fish into the tent. Even now some of the most eager fish-eaters are gathering outside, scratching and smelling where once the fish lay.

Wednesday, November 30.—Camp was left at 7 o'clock this morning and again made 3 o'clock this afternoon. The days are getting to be remarkable for their shortness now. The sun was not visible until 10.15 o'clock, although it was perfectly clear, and neither were there

any specially high mountains to obstruct his rays. At 1 o'clock he had again wholly disappeared from our view.

Our course of the day has been nearly northeast. Some of the distance over which our way lay has been extraordinarily well studded with niggerheads. There are certainly those which measure 3 feet in height with large enough spaces between for a man to fall into. Sometimes one end of a snowshoe comes in and gets caught, and at other times both of them meet the same fate, and one has an awful trouble to get out. At other times it might happen that the head goes down first. Still, it is well enough for the ones who have only their own feet to watch.

They can, as a rule, find some way to escape sometimes, but to drive five or six deer and sleds in a string after each other over such a road is probably one of the most patience-trying jobs ever a human being can encounter. Now this sled is caught, and then the other, or else they roll over and the loads are scattered along the trail. Sleds, harnesses, halters, etc., break and tear without limit. Even the sled deer get down into holes at times, from which they can hardly get out without help. If a deer happens to get down in a hole and is unable to get out quickly, when there are several of them in one string the others continue to pull, and the next moment something is broken or the deer injured. Even if the driver be wide-awake and stops the first deer in the string instantly, he can not prevent the following deer from pulling as far as their halter lines reach. One deer driven by Jensen was injured in that manner this evening. That one which was caught in the trap yesterday has been doing very well to-day.

Mr. Bahr is now preparing some new "joyamares" instead of a couple which broke to-day. Joyamare is the tree which fits under the belly in a reindeer harness, and into which the tug line is fastened.

The loss of our one dog yesterday has already proven to be quite a serious thing for us in driving the herd. Having only one dog he soon gets tired and will not work at all. Raisanan, Sara, Johnny, Koktoak, and myself, five men, have had all that we possibly could do to drive the herd to-day. All of us have been working so that our clothing is as if dipped in the sea. Fortunately we found a place where plenty of dry spruce can be obtained for fuel, so that the tents can be made warm and comfortable while we dry our clothes and get ready for the next day.

The weather has been most beautiful all day and evening. The morning temperature was 2 below zero and to-night it is 5 below and not a breath of wind. This afternoon it was possible for us to see the mountains on the Kowak near Riley Camp. It is somewhat of a consolation that when we arrive there we need not go any farther north, but can then go eastward until the end of our journey.

Thursday, December 1.—We were on the move again as early as it was possible to see this morning. Our way has been just as freely strewn with niggerheads as was our road of yesterday. It is frightful. Men and beasts get completely exhausted, and very little is accomplished by all our efforts. We have worked as hard as it is possible to do, and I doubt very much that we are more than about ten miles nearer our destination to-night. The whole distance traveled to-day has been ravaged by fire, so that the deer have had very little chance to feed until this evening, when, luckily, we found a very good moss place just on the bank of a good-sized creek, which seems to run into the Selawik River only a few miles below our camp. The sled deer with which Jensen had the accident yesterday has been able to walk loose with the herd, but it will certainly not be able to do any more work this season.

This is the first day under equal conditions that I have not been able to see the sun. It has been perfectly clear all day, but to us it has looked as if it had been the hour of sunrise all day. The mountains to the east and south, along the foothills of which we have traveled, are comparatively low and rounded, still they are sufficiently high to keep the sun's rays away from us.

To-night I am so tired from the day's work that I can hardly keep awake while writing these lines. Mr. Bahr is fixing his sled this evening. Not a day, hardly an hour, passes but what something breaks and needs fixing. It is certainly a special grace of God that no one has yet broken to pieces arms and legs on this awful road.

During last night the temperature went up to 20° above zero and with the elevation of temperature came a very strong easterly wind which knocked off the stovepipes and shook the stove sufficiently to tumble down the waterpots which were there already for the breakfast cooking. Yes, the one trial is not like the other. Every drop of water has to be melted from snow and as that takes much time I had to start my breakfast preparations shortly after 2 o'clock in order to be ready in time.

The same easterly wind has continued through the day and made traveling much harder. The thermometer at 8 p. m. shows 10 degrees above zero.

Friday, December 2.—This day has been as beautiful as a day can be in this northerly latitude in the month of December. But oh, how short the days are! To-day as we traveled farther away from the mountains out on the open tundra, we could see the sun from 11 o'clock till nearly 1 o'clock. At 3 o'clock partly cloudy, it became so dark that we could not see to travel. It was our hope to be able to reach Silawik River in good season this evening, but we failed. Thinking we were close to the river when we found good moss, it was decided

to let the herd be there and I stopped with the herd until Bahr, Johnny, and Sara arrived with the teams. Meanwhile Jensen, Raisanen, Strong, and Koktoak were to walk down to what we, in the dark, took for the river and find a good place for camp and to chop some wood, that camp might soon be made when the rest of our party came with the tents, etc.

Long, however, had I not waited with the herd before the four men returned. What we in the dark had taken for the river was only a few small willow bushes, and the river with its forest was probably 3 or 4 miles farther away. So leaving the herd where it was we retraced our steps one-quarter of a mile or so, down to a small pond which we had just passed and near which we thought we had seen the shadow of something like a spruce. At the edge of the pond we were joined by the teamster, and all of us turned off westerly for a short distance and really found three small spruce trees, two of which were dry and furnished our fuel for the night. But since they were only small trees, and one for each tent, we have of necessity to be very careful about the fire.

One of the sled deer got tired to-day, so now we will have to leave one or two sleds behind on the road to give the deer a few days' rest. Be it our effort to-morrow to reach Silawik, then there being plenty of fuel we can stay over Sunday to let all the reindeer rest a little, and then we will have time to rearrange the loads, etc.

The herd is getting fearfully hard to drive now. It would be better if we could or dared to stay over a week, so that it could eat and rest only. But for two reasons must we try to struggle on. The first, our provisions are running low; the Finns and we must get to some place where some more can be obtained. Secondly, if we lay here we might get so much snow on our last portion of the journey that we might not be able to get through.

The sleighing here continues to be very poor; in fact, here is hardly any snow. The thermometer showed 10 degrees this morning and to-night it is at zero again. A gentle northeasterly wind all day. Our course has been a trifle east of north. The road about the same as the previous days.

Saturday, December 3.—Camp was broke at the usual time this morning, but with the intention to go only to Silawik River and there camp for a couple of days' rest. At 10 o'clock we did reach the river also, but before we could get through the forest on either side it was a quarter past 11. A short while after our camp was cozily fixed on a small slough to the north of the river. A strong northerly wind began to blow as soon as we had made camp and the heavens were quickly overdrawn with a dense cloud. The same wind is raging to-night, but it does not snow. Where we are at present no wind is capable of disturbing us materially.

Just when ready to leave camp this morning one of the Finlanders reported one of their sleds broken. No time then for fixing sleds. Such things belong to the evening performances. So seeing that we had previously decided to leave some sleds, two or three, in order to relieve so many sled deer for changing with others which might grow tired, we simply left the broken sled behind and went on our way. To-morrow we have to try to adjust our loads still more, so that we may be able to leave some more sleds. The moss is excellent, surely the deer enjoy a couple of days' rest.

Mr. Bahr has been out trying to get some kind of game for supper to-night, but failed because of the heavy wind. So instead of game our little party of three enjoyed a meal of bacon, beans, and tea. If this wind and mild weather continue long I fear that even the little snow which is here will vanish away. It would have been well if some of the Koyuk and Bokland snow had been transferred to the Silawik. Such a transference would have greatly improved both localities for our purpose. The temperature is a trifle below zero all day.

Sunday, December 4.—A day most beautiful after a night of great storm. Breakfast was enjoyed at 7 o'clock sharp—not because of need for getting out, but because of hunger. One develops a wonderful appetite by being out night and day in the fresh arctic air. As soon as the light was sufficiently good, Bahr and Koktoak from our camp, and Strong and Johnny and Sara from the neighboring camp, went out to see if they could possibly find any game. At 1 o'clock they returned, but Bahr was the only lucky one to have shot a rabbit, the same to satisfy our appetite this evening. I have been home all day, tending to the fire and doing some correspondence. The letters written, however, will likely have to be unmailed until I again reach home. The reindeer seem to enjoy the day of rest as well as we people do. They eat and sleep and eat again the whole day long, and I suppose they do the same through the night.

This evening we had our little meeting in our tent, where we read together the seventh chapter of John and also Psalm 25, after which we had prayer and thanksgiving. The Eskimos, Mr. Bahr, and myself, however, are the only ones who partake of such things.

Strong was upon the hills to the north this afternoon to look over toward Riley camp, on the Kowak. He states that the trail is now good and that it is only about three short days' travel to it. We will soon have a chance to find out the reality of these statements. At 7 o'clock p. m. we are ready to go into our bags again. Temperature has been at zero all day.

Monday, December 5.—Three o'clock this morning did I wake Koktoak, who, for a change, should start the fire and bake the pancakes. At 6 o'clock breakfast was over and the dishes washed. The morning was most beautifully illuminated by the aurora, which made

it light almost as day. In fact it was lighter in the morning than what it has been during this past day. Just as we, at 7 o'clock, were ready to start the caravan, to join the herd later upon the hills, a very strong northeasterly wind began to blow. The wind was so strong that for half an hour we were undecided as to whether we should dare to venture out or stop over another day. Finally, in view of the fact that there was wood within 5 miles, where we could stop if the weather should be too severe, we started off. The wind was certainly fierce, but there being no snow to drift, and mild weather, just at freezing point, we did quite well.

Our course has been a trifle to the east of north all day for the foot of a big mountain on the Kowak. At 2 o'clock p. m. we made camp again on a small tributary to the Silawik River, satisfied with the knowledge of having made our 15 miles. The mild weather and strong wind actually ate the snow on the tundra to-day so that the nigger-heads are bare. This is really a sad thing for the sled deer.

Before starting this morning we had to relieve another sled deer and so leave behind us, on the Silawik, another sled. By this giving the freedom to a deer now and then, that same deer can step in and pull a sled again for a day or two when some other deer is getting tired. All of the deer have done remarkably well to-day because of the two days' rest they have had. The herd has not been one-half as troublesome to drive as it was the last few days of travel.

The wind continues the same this evening, but we are well sheltered from its disturbance by a forest of spruce. After evening prayer and thanksgiving we are ready to retire at 7 p. m. Good night.

Tuesday, December 6.—Our day's struggle began at the usual early hour, between 3 and 4 o'clock. The whole night previous to said hour the wind had been raging so fearfully that we thought the whole forest in which our camp was would blow away and we with it. Stove and stovepipes all rolled over and made a terrible racket in the earlier part of the night, and after that all sleep was taken away from me. The rest of our party seemed to be but very little disturbed by such a trifling thing. With the storm came also real mild weather, which had a very disastrous effect upon the little snow which was yet left. Poor was the sleighing yesterday, but to-day it was so bad that it was next to impossible to do anything. We traveled probably 5 or 6 miles until 10.30 o'clock, when we concluded that it was better to stop before all the sled deer gave out. During the afternoon we have caught two fresh male deer which we are trying to break for pulling the remaining distance. Wonder how it will go. The first effort to lead them by a halter about one-half mile was a very trying one, indeed. Bahr had one of them on his lot and I the other, and a glorious time we

had before getting them to the place where they should be staked. When we arrived at camp Koktoak had coffee ready. Oh! it was excellent. * * *

Wednesday, December 7.—This has been a pleasanter and altogether more successful day than yesterday. Still we have certainly had our trials and troubles to-day also. As yesterday was dark and dreary with a terrible wind, so has this day been bright and pleasant with a light northeasterly breeze, sufficiently sharp to remind us of the fact that the exposed parts of our faces were subject to frost.

Breakfast was over at the usual hour and all of us were ready to travel as soon as the light permitted it. Three men had, as usual, gone to gather the herd while the rest of us broke the camp. But something strange had happened to the herd during the night. It had split up in three distinct parts and scattered in different localities among the hills, so that we had quite a task to get them all gathered. Only the two parts were found and united by the time the teamsters arrived at the place where the herd was supposed to be.

Two more men were at once dispatched in search of the balance of the herd, and after about an hour's delay a flock of 65 deer appeared at a distance. Sara was the lucky one who had found them. It was specially hard this morning to find and to track the different flocks, because of the bare ground. The hoped for snow had disappointed us entirely. The two sled deer we tried yesterday did fairly well this morning. One of them walked very nicely behind the sleds of other deer, but the other one did not want to walk there at all, therefore we were obliged to lead him by hand for a couple of miles so as to teach him some manners. After that both of them were given their liberty to walk loose in the herd until this evening. As soon as we stopped they were again captured and staked together with the sled deer over night. By to-morrow we hope they will do still better, so that they can soon come to the relief of some one of those which are tired and worn out.

Our course was that of the previous days until 10 o'clock, when we had reached the very summit of the divide, between Silawik and Kowak rivers. From there we took a more easterly course as we descended the mountains. At 2 o'clock p. m. we had arrived at the foot of the mountains, and a long stretch of level tundra lay before us—when I say level I do not consider the "niggerheads," because here appears to be plenty of them—and then as night was rapidly drawing nigh we had at once to look around for a camping place. Directly in our course no wood was to be seen for miles, and, what was worse still, the ground had been burned for several miles already and, as far as we could judge from the grass and bushes, there would probably be several miles more of burned ground in that direction. Thus, being

on unknown ground. we really did not dare to go any farther toward the east, but turned considerably to the north of our course toward a little creek, beside which grew some spruce and at which we hoped to find moss.

The fire had ravaged even this low tundra all the way east of the creek, but to the west of it the fire had not reached, so there was good feeding ground, and we, ourselves, have good shelter for the night—our first night in the Kowak Valley. Riley Camp is now supposed to be about 10 or 12 miles off. We are gradually getting nearer to our destination, probably 200 miles or a little more, that is all.

The sun we have not seen at all to-day again because of mountains in the south. The thermometer registered 4° below all day. Our so-called guides do not yet know the way so that they can inform us where there is moss or no moss, burned or not burned ground, wood or no wood, although we are now where they claim to have spent most of their days. This is really discouraging.

Thursday, December 8.—At 8 o'clock this morning camp was broken, the deer harnessed, and three of us took the teams and the two new-sled deer back into our true course, while five men and the dog had at an earlier hour gone to gather the herd and bring it to join our party.

We drove on for probably 2 miles, but no herd could be seen anywhere, nor could we hear any sound of either men or dog. The herd had not stayed on the ground where it was left last night, although there was fair moss; but it had begun to wander about on the burned ground, and there, not finding anything to eat, it had taken to the hills again and gone clear over the divide and into the Silawik country the second time. And thus it took the men until 10 o'clock before they were able to return with the runaways.

From 10 o'clock till half-past 2 we made good use of the time and traveled at least 10 miles. This evening we are as near Riley Camp as it is safe to be for dogs—probably 3 miles or so.

Camp was made, and then the two Eskimos from Bettles were sent to the village to notify the people to chain their dogs. In case any white men be living there or anywhere along our trail I have written a letter, to be read by each such, to tie and to keep tied all their dogs as long as it is necessary for the reindeer to come a safe distance away. When the two guides were going in to the village, Koktoak also asked for leave to go along. It was granted him, with the promise that they all should be back before daybreak to-morrow, that no delay may be caused by their absence.

The day has been clear and beautiful, but no sun. Perfectly calm all day, and the temperature has been slightly under zero, but to-night it is getting cloudy again and the temperature has again gone up to 10°

above. It is now 6.30, when Mr. Bahr and I are ready to creep into our sleeping bags.

Friday, December 9.—All were ready for a start as early as we could see this morning. But as the three Eskimos had not then returned from the village I had to go with Sara and Raisanan in search of the herd. Even during the last night the deer had taken a notion to walk quite far. When we at 8.30 o'clock returned to camp with the herd the boys had come and a start was immediately made for Riley Camp. As the trail was unusually good it did not take us long to reach that place. On the way, while driving ahead of the herd, a man came to meet me to see if he possibly could make arrangements with us to go along to Bettles.

According to conditions, no such arrangements could be made, and although we would have liked to have another man for help in driving the herd, he had to be left behind. At Riley Camp the pleasure was granted us to meet four or five other white men, among whom might be mentioned Mr. Dyer, the storekeeper and Mauritz Johnson, a former inhabitant of Unalaklik. Mr. Van Deeler, with his wife and daughter and several other white ladies, reside at this remote place in the world. It was, indeed, a treat to again have the pleasure of seeing some white people besides those in our own company. The natives, 25 or 30 in number, were really well-looking Eskimos. They appeared to have plenty to eat, and happy they were.

Some articles were bought from the store, and considerable talking was done. Everybody there was anxious to know "Who is our President?" "How about the war?" "Is there any new strike down your way?" Such and dozens of similar questions were to be answered, so an hour passed very quickly by. We started off again and moved steadily onward, but the river, Kowak, was very bad to follow, and after having gone about a mile, on the slippery ice and bare gravel bars, it was concluded that we had better take to the tundra again. The whole day has been dark, and so evening came early. Having gone about 4 miles from Riley Camp, we thought best to make camp, and so we did, this time to the south side of the river and just in the outer edge of the timber. A large open tundra is now ahead of us, which promises a good trail. And here is plenty of timber to the left side along our trail, into which we can take for camping at any time we so desire. For supper to-night we feasted on whitefish, which is a present from Maura Riley, one of the noted natives of the place.

The temperature was 5° above zero this morning and to-night it is 10° above. Just as we were ready to retire it begins to snow heavily.

It may also be said that at Riley Camp the white men have learned to know the reindeer as the beast of burden in this country. They are all perfectly satisfied with the service of the deer, and those who

own reindeer already would never think again of using dogs as long as reindeer are to be had in Alaska.

They had, however, had a sad accident with their deer. During the summer the Eskimo who had charge of all the deer for their respective owners had let them all loose, and seven of them strolled away so that their keeper could not find them again. They have been sought for quite considerably, but all in vain, until a few days ago when a report from Silawik had reached here that a native from there had been out hunting caribou, and shot seven such; but they all had halters on their heads and four of them carried bells around their necks—wonderful caribou! The United States commissioner at Riley Camp had, by the request of the deer owners, gone to investigate the matter yesterday.

Saturday, December 10.—Bright and early were we on the move this morning, as usual; that is, as early as the arctic daylight permits. Two little boys—Tom and Isaak Wood, cousins, and of 14 and 15 years of age, respectively—followed us from Riley Camp yesterday, and stayed with the Finlanders during the night, and have also followed us to-day. They have, indeed, been a very valuable help to us in driving the herd. The last few days the herd has been so bad to chase that it has played us all out. As it is we can never have more than five men with the herd, because it takes three men for the teams. And five men without a good dog—the dog we have is good, but only for two hours a day. He gets tired; can not continue to drive a herd over mossy ground; after that it has already traveled such a long distance and begins to be worn out. I have really been disgusted and have worried greatly as to how to be able to get along. So we really appreciate these boys' curiosity, and wish that it would continue for some days.

They are happy to go along for the food they need, but at present even that is quite a big item with us, because our supplies are running low; and if not able to replenish the same at some day in the near future, I know not how to be able to reach our destination. As to our travel, we have done better to-day than we have done for a long time. Without question we have made 18 miles during the short day, and that is not bad at all. This success of ours is due to a good trail. The tundra to the south of Kowak and eastward from Riley Camp is smooth and level; sleighing is here also a little better. Plenty of moss everywhere and no brush. These conditions have enabled us to keep a straight easterly course all day. The whole day has been cloudy and misty, so that the mountains on either side have been hidden from our view, except at times they have been seen as shadows in the fog. The forest along the river we could also see only occasionally, when at some curve of the river we came closer to it than ordinarily.

Johnny asked for leave this evening to go to Callamute—a native village some miles off to the north of us—to see some relatives and

then try to get some provisions, and so promised to meet us at Poto to-morrow. Poto is a village some five miles higher up the river. Johnny took Isaak Wood along to Callamute, but Thomas stayed here to take Johnny's place in driving the herd to Poto. Both our new sled deer have been decorated with harness to-day and been initiated as draft animals. The one had done excellently well, but the other does not prove to be exactly what we hoped he should be. He drags the hind half of his body as if hurt in some way, but no one knows of anything having happened to him.

The wind has been from the east and very light all day. About one inch of snow has fallen during the afternoon. Temperature $+10^{\circ}$ all day.

Sunday, December 11.—Eight thirty o'clock this morning we were already started on our day's march. The herd had, during the night, traveled several miles back from where we came yesterday, so it took about an hour and a half before we were all joined again. Long had we not traveled before strange voices were heard from the direction in which we went, and a little later a lot of moving objects could be made out in the dim morning light. These were natives from Callamute—the whirlpool village—who, having heard of the reindeer being in their neighborhood, would not miss the rare opportunity of seeing a reindeer herd, so they came several miles to follow us to the next village, Poto, "The Hole." Men, women, and children made up the crowd of 18 individuals. Two dogs were with them also. These latter were kept in strong chains; otherwise the fun had certainly been too much for them.

With all these people walking after the herd our efforts in chasing need not be great. We traveled on steadily until half a mile or so from the native village Poto. There the guides claimed it was necessary for us to again get on the ice. We had the whole herd down on the river also, and marched onward, when suddenly the leading deer started to run to the sides, and in a few moments the whole herd was on a stampede back again. The greater portion of the herd was soon gathered, but some 50 deer, of the wildest, continued to run right back as fast as they could go. With all our efforts it was impossible to get the stampeders back to join the larger flock without driving the latter back over a mile. At last a union of the two portions of the herd was accomplished. Another road was then chosen straight for the mouth of Pah River. The herd and teams were then driven the new way, while Billy Strong and myself, together with most of the Callamute natives that had come to meet us—three of them went along to show my men the way—went to Poto.

The sole object of our going into the village was to get some provision for the Finlanders and the guides. As stated yesterday, Johnny was also to meet us there with what little provisions he could have

procured at Callamute. It had also come to my knowledge that there was a native who lay there with a fractured leg. So, with the intention of also bringing that man some help, our errand became twofold. The man with the broken leg was attended to, and several other men and women and children with slight ailments of various kinds were given medicine and advice. Forty-nine Eskimos were gathered and with them we had Bible reading and prayer. Most of the 49 partook in the meeting by prayer and thanksgiving. At the close of the meeting all stood up and read the Lord's prayer in chorus. That they have learned from their teacher at Kotzebue, or Kikaktaurik, as the natives call that place. After the meeting at Riley, Jim—the man with the fractured leg—invited Johnny, Strong, and myself for a meal of beans, pancakes, and coffee. Meanwhile two native women very kindly sewed together my squirrel parka, which had suffered considerables damage in crossing the Buckland forest. * * *

By the time luncheon was over a dog sled was loaded with the provisions we were able to get, four big malamut dogs hitched up to the load, and off we went to find our camp, which was supposed to be some 4 or 5 miles off. Provisions obtained were the following: Two sacks of flour, 15 large white fishes, and some dry salmon. The guides had also to have boots, mittens, and snow shoes. They had completely worn out and broken to pieces one pair of snow shoes each since we left Unalaklik. Many of the Poto natives came along to see the reindeer. But when we reached the camp with our load, the time was already far spent; it was dark. It was cloudy and the snow was falling lightly. The reindeer were feeding far away, so that those who came to see them had nothing for their long tramp.

Thomas Wood followed the herd faithfully to-day also, and proved quite a good help. What extra help we shall get after this I know not, but some would certainly be of need. The trail has been most excellent to-day also. No niggerheads and no bushes have interrupted our course in about 10 or 11 miles of our journey. The temperature has been about $+10^{\circ}$ all day, with a gentle easterly wind blowing. The same wind continues to-night and it is still snowing. Bahr is cooking whitefish to-night, while I am writing. After supper we have our usual evening prayer and then retire to our sacks. One discouraging fact in connection with our journey is that our guides do not seem to know the way even here. Previous to yesterday they have always called the distance from Riley Camp to Bettles 160 miles, but white men say there is all of 200 miles and possibly 250. Before, the trail has always been good the remaining distance, but now it is extremely bad. In fact, here is no trail, but after a couple of more days they say that we will have to cut our way in like fashion as we did on the Buckland.

Of course, we have to face the conditions as they are; but why could they not state things as they are, if they know them; and if they did not know them beforehand, then such individuals are not qualified as guides and should not hire out as such. One thing is certain, that since we came over the Silawik and Kowak divide and on ground which they, the guides, were supposed to know, our progress has been slower than before. We have had better way and more snow and traveled more miles in a given time, but by making unnecessary crooks and steps our way has been made at least three, maybe four, days longer. Our camp is to-night located on a small river by name Kot-cheak, which means the new river. This river flows directly into the Kowak, about a mile north of us and probably 12 or 15 miles west of Pah River. Have seen no sun yet on the Kowak.

Monday, December 12.—Seven o'clock in the evening and the trials and troubles of the trail life are now over this day also. Some days pass smoothly and quietly by, others again are full of friction here and there. This one belongs rather to the latter. At 4 o'clock this morning I was up making pancakes. Eight o'clock all were ready for the day's journey, and the slow march began. After having traveled about 3 miles the herd and the teams met and joined and took then a straight easterly course. As we came higher and higher up the Kowak the valley became narrower until about 12.30 o'clock we arrived at a place where the hills on the south come right down to the river. At that place we had again to take to the ice on the river and follow it for about $2\frac{1}{2}$ miles. After that we turned off to the left and camped almost opposite the mouth of Pah River, the "Door River," because it opens the way to Silawik, and to the north of Kowak, about one-half mile off from its banks. Our efforts of the day are crowned by passing about 12 or 13 miles.

The temperature has been zero all day until evening when it went down 2° . One of the new sled deer which Mr. Bahr has used a couple of days has gotten hurt in some way so that we had better give him his liberty again. Another was caught which we will have to break instead of the former. For that reason we made camp at 2 p. m., so as to be able to see a little bit what to do. As there happens to be an Eskimo village only a short distance southeast of us, Strong ran off to it before camp was made and without asking for leave to do so. No sun, east wind, and cloudy all day. The new moon shows a little to-night.

Tuesday, December 13.—Before 7 o'clock this morning Strong returned from the Pah River village and brought a young, bright Eskimo by name Jim Karamak—commonly known as Kobuk Jim—with him. This man followed us the whole day and has been of good service in driving the herd. It seems to get worse and worse every

day to get anywhere with the herd. Jim is staying with Koktoak, Bahr, and myself over night and is to return home to-morrow morning.

We have really done well to-day in having traveled at least 15 miles. Most of this distance has been done on the river. To our good fortune the ice has been better than we dared to hope. It has been covered, almost everywhere, with 6 to 8 inches of well-packed snow, so it has been no hardship for the deer. One thing, however, which we have not before had so much trouble about, is the moss. At very few places can we come close enough to the hills or moss-grown tundra to get the necessary food for the deer except by much trouble. Strong wanted to camp near an Eskimo village, which we passed before 12 o'clock to-day. The reason for such a desire is quite plain, and, of course, his wish could not be granted. We traveled on till 2.30 p. m. when it suddenly became so dark that we had to think of some place for our night quarters. Traveling on, if possible, with greater speed to reach a hill on the north side of the river, which from a distance had looked so nice and promising as feeding ground; we soon reached it, but only to be thoroughly disappointed. It was all burned.

We had to go onward until moss was found, and after a while we found plenty of moss on the south side of the river, but it was among the timber. We dared not let the herd into the thickly timbered country for fear of the difficulty of getting it out again without leaving some deer behind us. It was, however, not hard to clear enough of the small spruce trees away so as to get room for the sled deer. It was done while the herd was driven one-third of a mile higher up the river to a place where we could get up on the hills. Those hills were also burned, but small islands of moss are found here and there, upon which the herd will be all right during this dark and snowy night. Had the new moon not disappointed us this evening, on account of a snow storm, it might have been possible to have gone a little farther and possibly to have found better moss for the herd also, but we know not. The guides do not know, and we who are strangers can not know. The young deer which was taken last night for breaking as sled deer had gotten loose during the night by breaking the halter. Two vain attempts were made by us this morning to catch him again, but yet he enjoys his liberty. A native from Poto—the village at which we were two days ago—came walking after and overtook us this forenoon, bringing with him as a present for me two large fishes, one white and one catfish. It has been cloudy all day and toward evening it began to blow a very heavy easterly wind. The snow is drifting considerably. Koktoak has lost our hatchet to-day. Eight o'clock and all our trials are now over for the day.

Wednesday, December 14.—As early as the first streak of dawn was to be seen in the southeast six men were dispatched to find the herd and to bring it back to the river. More men than usual were

engaged in said work because it was feared that the herd might have strolled far away, and then it would not have been too many with six—eight or nine would rather have been better. Our fears, however, were unfounded. Good moss was found on a hill close to where we had been feeling for it last night, and there the herd stopped all night. So, within an hour after the departure of the men they returned to the river with the herd.

Meanwhile Jensen, Bahr, and I had harnessed the driving deer and were ready to join the herd in its onward move. Before starting, the herd was inspected as usual and found too small. One or two well-known deer were missing and we knew at once that they were not alone, but had company wherever they were. So three men had to return to the hills, and after half an hour they returned with the missing ones, some 30 deer. Those deer had parted from the main herd and gone down into a creek among the bushes; and it being yet not quite daylight, and probably a trifle of ambition was lacking in taking much care to find out where the various trails lead, the result was as stated. While waiting for the lost deer the rest of us were busily engaged in lassoing the one which we failed to get yesterday. When Mr. Bahr only got a fair chance to throw his rope, the young fellow was caught at once. Halter was put on, and to our surprise he went along like an old driving deer the whole day. We also took one big driving deer which used to belong to Moses and which the Finns had always reported as no good.

They claimed that he would not work and, because of being unusually big and strong, no one had hitherto cared to tackle him. Now, when really needed, I thought we had better give him another chance to demonstrate his ability, and prove or disprove what was said about him. Here was a suitable trail to try him in case he be bad. When once rigged up that deer also walked along with his load like an old horse. These two new deer will again enable us to relieve for rest other two, which in their turn can step in and relieve others when tired. We are now beginning to get along nicely. All of these morning performances over, it was 9 o'clock when "Kobuk Jim" said farewell and returned to Pah River, and we proceeded toward the rising of the sun, in more favored portions of the world. The trail has been good all day, except for a little over a mile, where we were bothered with overflows. The strong wind of last night had packed the snow on the ice, making it really easy to travel, compared to what we are accustomed. Shortly before 2.30 o'clock we made camp again about 15 miles nearer our destination.

The moss is plentiful all about us, but it is rather hard to get, up on the steep banks of the river. The hills are all covered with young spruce, so where we have our driving deer there we have to cut away the trees. This adds to our work, but it is a work which we are happy

to do, if only there is plenty of moss. The wind of last night quieted down toward the morning. In the east has been a clear streak all day and partly so in the south, otherwise it has been very cloudy. We have had what is considered to be daylight on the Kowak to-day, but oh, it is nothing to compare with our sunny Unalaklik. Toward evening, i. e., at 2 o'clock, it became very dark all at once. The moon does not show herself to-night either. The wind has been easterly all day and is gaining in strength this evening. We have had a temperature of 5° below zero to-day, but to-night it is only 3° below. About noontime we met a party of nine Eskimos and three dog teams going down the river.

Thursday, December 15.—This morning was very cloudy and dark. No one could see to gather the herd or to travel at all until after 9 o'clock. At that time it cleared off a little, and we have had a fair day since. Two o'clock it was quite dark, but the moon soon came to our aid, so that it was possible to travel yet a couple of hours. We made camp at 4 o'clock, I hope for the last time on the Kobuk. We found good moss this evening for both herd and sled deer, but like the preceding three or four nights, it was hard to get to it. The traveling has been fair. Not much glare ice, but quite a few open places. It has been possible to go around the openings fairly well; and no one but myself has had the misfortune of getting wet. As we have had several portages to make across timbered and brush-grown ground to-day it was necessary that I walk ahead again, leading my deer for the herd to follow. So just before stopping this evening I was to cross a creek on which the ice did not look very well.

Finally a place was found which I thought would serve as a bridge. But no; one foot went down and I got wet to my knee, then the next went the same way, and so it went every step until the opposite bank was reached. The herd found a better place and crossed without getting into the water. As Jensen and Bahr had come quite far behind with the sleds, on which tents and stoves were loaded, I could do no better to pass time than to run about, break spruce limbs, etc., to prepare camp until they came. About one-half an hour later Bahr arrived. Tents and stove came up unusually quick, and now the cold dipping belongs wholly to the past. We are warm and comfortable, and have just enjoyed a big meal of whitefish. This is old and not altogether first class, but it does taste well just the same. The wind has been easterly all day. The morning temperature was 5° and this evening it is 2° above zero. At 1 o'clock this afternoon we met a party of eight Eskimos and three dog teams, who, like those of yesterday, all go to Riley Camp to celebrate Christmas.

Friday, December 16.—During the night every particle of clouds had disappeared. The moon and the stars had perfect sway. This condition of things brightened up the morning considerably, and so

to take advantage of the light we prepared for an early start. But somehow things were contrary and instead of getting away early it became late. Bahr, Jensen, and I went after the sled deer—14 in number now. Jensen was last, and upon the question if he had taken all the deer which were left, he answered "yes." It may here be stated that there was plenty of small spruce, so we had cleared space for the deer with axes, and one could not see any farther than it was thus cleared, so we all went downhill and out of the woods. Having arrived at our sleds nearly one-fifth of a mile away, it was at once discovered that he had left one deer behind. This naturally caused a delay. Then one of the deer which has rested a few days had to be taken from the herd to relieve one which got tired yesterday. Just as the herd came down to the river bank three dog teams and nine Eskimos came down the river, as all others, bound for Riley Camp. This meeting was a third cause of delay. Then worst of all was that the deer let free would not follow the herd, but took to the hills at once. First, after a whole lot of trouble, did we succeed in getting said deer down again into the herd. If we had then lassoed it again we had done well and prevented a great loss of time.

Soon had we to leave the river for good, because of overflows and glare ice. Nothing remained for us but to cut our way through a heavy spruce forest with much underbrush. And then what a task to take a hungry herd through such a place, especially as there was good moss on the adjacent hills. At 11 o'clock we had reached a small hill on which was less wood and plenty of moss. Then we five men who had hitherto driven the herd decided to stop for a while until the other three men arrived—the two with the teams and Jensen with the newly liberated driving deer, which before caused so much trouble. * * * After a few minutes' walk we met the teamsters and Jensen both. He had succeeded in lassoing the deer and to put on a halter, and now it had to follow after—it being tied after the sleds. Its captor, however, was intensely worked up over the extra excursion, and threatened to shoot the deer. Upon examination I found that one eye was perfectly blind and the other almost so. The better of the two eyes was much swollen and blood had extravasated into the eyeball, filling the chambers so that the tension was extreme.

Jensen has evidently taken my warning in regard to shooting the blind deer before it becomes a necessity to do so, because as yet it is not done and it is 9 o'clock p. m.

From the place where the herd stopped we again left for still higher altitudes. The ascent was quite steep; much snow and much brush hindered our progress. Strong was given my deer to walk ahead of the herd, picking the best way possible. After the herd I walked with the ax to prepare the trail for the teams, which followed immediately after. Thus I spent over two hours and then Mr. Bahr took my place

while I took his, until 2.30 o'clock, when all were well satisfied with our tramp for the day and we made camp on a little pond in the midst of a big forest. The moss is exceptionally large all along our course since 11 o'clock this forenoon. All we have been able to accomplish with our efforts of the day is probably 5 miles. Still this has been the brightest day we have had for two weeks.

Coming up on the hills we were strengthened in our belief that the sun still exists, in that we could see him shining upon other hills far to the north. One noticeable occurrence of the day is this—Strong's wife was in the Eskimo party we met this morning. But I, not knowing it, had sent her with the rest of the party down the river as fast as possible in order that the dogs should not bother the deer. So no one knew of Strong's misfortune until one man of the party returned to have a look at the herd, but it was then too late for Strong to even shake hands with his wife. She will return to Bettles after Christmas.

In making trail to-day a bush hit my left eye. The same causes me much pain to-night, so I have it bandaged up and cold compresses applied. The morning temperature was 5° below, but during the afternoon it grew rapidly colder and now it is 25° below zero. The moon is bright and it is perfectly calm. Quietness reigns in camp. Bahr and Koktoak are in their sacks, and I will also soon be there to gain strength for another day of trials.

Saturday, December 17.—During the night the temperature had again jumped from 25° to zero, and has remained there during the day. With the change of temperature has also been a gentle snowfall, lasting all day, and a soft easterly breeze has been blowing. Because of the snowing, it became light enough for our purposes rather late in the forenoon. It was 9 o'clock before we could see sufficiently well to gather the herd. Having to travel through forest again, one man was dispatched ahead to cut trail for the rest of us to follow as early as possible. Much to our aid, we struck a native trail early this morning. It was a much easier task to enlarge an old trail than to make a new one. Jensen had his turn to swing the ax to-day, while Bahr and Koktoak had all the teams. I walked ahead of the herd, making the well-known sing-song to call the deer to follow. It was a job which also lasted the whole day, and which has worn out my voice completely.

Considering the circumstances, we have done well in traveling at least 10 miles during the short day of about five hours. It became dark at 2 o'clock, and half an hour later we made camp on the east side of a little lake which is the very source of one of the branches of Kokbak River. To-morrow morning we are ready at once to enter upon the low portage between Kokbak and Hogatza rivers. Oh, if we only did not have so much forest with which to contend. As far as can be seen up the hills, and then much farther still, it is said to be

nothing but small spruce, through which we have to cut our way. About noon to-day we met another party of Eskimos bound for Riley Camp, like all others.

How fortunate, after all, we are to be here at this early date. To judge from signs in the woods, and from what people say, the snow must be fearfully deep here in January and sometimes even in December. Now we have about 2 feet of snow, but suppose that we had 4 to 6 feet more. To travel the herd would then simply be out of the question, and how should we be able to get to the moss? Our food supply is now beginning to run quite low, so of necessity must our food be portioned out. As yet we have flour and old whitefish in our camp, but the Finns are short on even flour. We all would need to stay over Sunday at this place, but I deem it advisable not to do so. It is better to go on a little way, so as to reach our destination at the earliest possible date.

Sunday, December 18.—During the night the clouds disappeared and the morning was bright and beautiful. And as the night has been quiet and peaceful, we—Bahr, Koktoak, and I—well rested and with new ambition, were up and ready to travel about 8 o'clock. But, because of the Finlander's unwillingness to travel to-day, we did not get a start before 10 o'clock. I walked ahead with an ax and cut the trail as fast as the teams could follow until 3 o'clock this afternoon, when I asked Jensen to take the ax the balance of the day. Of course, the day was then already passed, but it being moonlight we continued to travel. It was no choice either, but a stern necessity to go onward, because all of the 14 or 15 miles traveled during the day have been burned, so that not a bit of moss has been found. The place at which our so-called guides have said was plenty of moss was reached at the hour of 7 p. m. after many difficulties.

But moss was found only on the river bank and on a small patch big enough only for the driving deer. So Sara, Raisanan, Billy, Johnny, and Koktoak drove on with the herd up on the hills to the east of Hogatza River, where was said to be much more moss. But no; nothing but small islands of moss were found, and those were long distances apart. The whole country seems to have been ravaged by fire some two or three years ago. The herd had been left there and the men returned only to tell the sad story and advise us to camp on the river. Since we had moss here for the driving deer and not knowing where next to find any there was naturally no hesitation as to what best to do. Especially so as it was getting to be late in the evening. * * *

The day has been perfectly bright and beautiful, but no sun. The temperature was 2° this morning, but to-night it is 20° and perfectly calm. It is now 9 o'clock p. m., and our struggles of the day are over. The eating of supper is yet left, and I am sure it will be a pleasure. Since breakfast at 6.30 this morning I had not tasted a

bite of any kind, nor a drop of water until nearly 8 p. m., when a piece of oily and moldy salmon tasted like candy, and a drink of cold water from the Hogatza River gave immeasurable satisfaction.

Monday, December 19.—The day has been beautiful and pleasant, but cold. The thermometer showed -25° , and it remains at the same point this evening. We were all more or less troubled with our noses, feet, and fingers. It was just about possible to keep them from freezing when having to face the cold breeze on top of the divide between Hogatza and the Alatna River. If this weather continues I understand that it will be necessary to dress otherwise hereafter than what we have done hitherto. Being on top of the divide and with low mountains toward the south, it was possible to see more of the broad daylight to-day than we have done for two weeks or more. Still the sun himself was not visible.

At four o'clock breakfast was being prepared and because of the brightness of the morning daylight began to show itself at 8.30 o'clock. At that moment four men were dispatched for the herd, one man, Strong, went on ahead to cut the trail, while Bahr, Koktoak, and myself got all the sleds and driving deer ready. Nine o'clock we began to move onward so slowly in the frosty arctic morning air. As we went along the trail watching for signs or sounds from the herd or the men who had gone after the same, we could detect neither. Only burned ground everywhere and no sign or sound of anybody but ourselves. Probably we had traveled $4\frac{1}{2}$ or 5 miles, all the time thinking the herd was to the south of us and not able to penetrate the thick forest on that side and so just traveled on till some more favorable crossing be found, when suddenly a thought occurred to me that I better unhitch my deer, and, leading it, run back and follow the tracks of the men who had gone after the herd until they should be found.

Bahr and Koktoak could go on until they found moss, and there wait for our arrival. Accompanied by my deer I retraced the lonely path for over two miles before we could hear any sound of the herd being driven. Then I heard the bell, and once in a while I could hear the dog barking. Guided by the sounds we were soon together, and heading my deer slowly ahead the herd followed nicely. In about one and a half hours I was back to where my sled was left, hitched up again, and continued the onward march, singing the usual song, which is simply a sustained or prolonged tone of $\text{o}\bar{o}$ sounded in the third tone in the key of C placed an octave above middle C.

Most of the 12 or 14 miles traveled to-day has been burned also. To our great fortune, we have found good moss this evening in the Alatna River valley. As yet we can see nothing of the river itself, but I hope that it is not far away. At 4 o'clock, the herd having just then reached the teams, we made camp and are very comfortable in our tent, in spite of the cold. The night is beautifully illuminated by

the moon and the stars. During the afternoon we met several sleds and a big lot of Eskimos, again bound for Riley Camp.

That meeting caused quite a little trouble, as it happened to be just where the brush was thickest. Oh, this constant struggle with the forest! It is terrible to come through with a herd of deer. We have now traveled for two days and not yet found a sufficiently large open place so that the herd can be properly inspected. It would really be a wonder if we should be able to come out of here without any loss. Especially now when the herd is tired after the long and difficult journey. It hardly moves anywhere now unless one goes directly for the individuals. It is no longer possible to scare the herd by use of the mouth—in fact most of us are practically voiceless to-night, because of its overuse—but one has to come right up and threaten to take hold of the deer if they shall move.

Tuesday, December 20.—It is now evening again. We are really tired of this traveling. In starting this morning as early as conditions permitted it was impossible to see the whole herd, but we had, as has been the case for two or three mornings before, to walk about the bushes to see and recognize one deer here and another there. Thinking we had them all, the onward march began. Strong had gone an hour earlier while yet dark to enlarge the narrow trail. Then came I before the herd with one deer, singing my monotone as long as the vocal cords could serve the purpose in the frosty atmosphere of 30° below zero. The men who followed the herd had certainly also an unenviable job. If the forest in our way has been thick the previous days, it has been thicker to-day. If here were only timber, then would we consider ourselves lucky, but it is not so. The timber is all filled in with underbrush of birch and alder which makes it impossible to come through anywhere but on a prepared trail. Not one place anywhere to be seen, until we finally at 12 o'clock m. reached the Alatna River.

It was, indeed, a great relief to get out from the troublesome forest once more. I, being ahead of the herd, reached the river first, and in a few moments the whole herd and all the men were gathered with me on the ice. Naturally, the first thing thought of was "Have we all the deer with us now?" Most of us noticed the absence of two reindeer. Both of them were females—one fawn, and the other one 3 or 4 years old. Now new difficulties presented themselves. What was best to do? Six men of our number returned to look for the missing ones, while two men watched the herd and looked for a suitable camping place where there was not too much brush. Ole Bahr and Raisanan were given the responsibility of the latter task. Having gone along with the searching party for about a mile and a half I returned to the herd, and was then fully determined to stop over night at first favorable place. Bahr, Raisanan, and I prepared for moving

the herd and the teams a few hundred yards down the river, when sounds were heard from the five men who were yet out searching for the lost deer. Upon waiting a few minutes longer they were soon on the river bank and with them the missing fawn. The older female was not found. The fawn had in some unknown way sustained quite a severe injury on the back.

A large skin flap was actually torn away leaving the bare muscles exposed to the temperature of -32° , as it is now. The prognosis is bad because of the cold. How the injury was received we can not explain in any way except he, possibly pushed by the herd, had run in under a dry tree. Often old trees are found standing on an angle of 40° to 45° , more or less, and the fawn having no horns there was nothing to hinder him to walk under and into a place where dry, sharp branches would catch and scrape the back about as has happened here, especially if the pressure of the herd continued. As to repair of the injury nothing can be done. The tissues exposed are already frozen hard as a rock. We have now decided to stay here over to-morrow. Five men go back with some sled deer and search for the lost deer, while three men remain at camp taking care of those which are here.

It has been a beautiful day, calm and bright, i. e. as bright as a day can be without a visible sun. This evening the moon is shining beautifully, but it is certainly cold. The thermometer stubbornly shows 32° all afternoon and evening.

Wednesday, December 21.—Long before daylight our preparations for the day began as usual. Bahr was to take the driving deer and follow the trail and two men walk on either side of him, always keeping abreast and enclosing all the trails, and then beginning at the camp and continue the search to the place of our previous camp or a little farther if necessary, we all felt quite sure that the missing deer could be found. The plans all ready, we sat down to eat our breakfast. But at that very moment a deer came walking right up to the camp and began to paw on the sleds for fish. As we made efforts to chase it away we recognized in it the very one which was lost yesterday. She, the female deer, when having found out that she was all alone in the woods, had come after us in the night. After breakfast we walked back to examine the trails on the river bank where we had first come down. Only one new trail was found. It was clear that she had returned alone, and also that no more deer were left behind, because then this one female would not have returned unless her company had also come along.

From this unexpected turn of things our plans were altered, and we found it, of course, to our advantage to go onward toward our destination. Because of the extra performance of the morning it became 9.30 o'clock before we got ready to leave camp. Still, having

a good trail to-day, we have traveled at least 15 miles during our six-hour day. Had our guides known where there was moss, then could we have traveled farther this evening; but not knowing anything about the road, one has to delay much in finding the moss, and many a time when it is found one is afraid that probably there is no more to be found for many miles, and so in order to be safe camp has to be made. The moon is hidden in clouds this evening. A sharp easterly breeze has blown all day. The thermometer has registered -23° until this evening; it is now getting a little milder again. Among the chief events of the day may be mentioned that during the forenoon we met two dog teams followed by two men and a girl—all Eskimos. About noon time, just when coming across a portage, to avoid a long and useless bend on the river, I, with my deer, came unknowingly right into an Eskimo village.

The whole herd was behind me on an extremely narrow trail, with thick brush on both sides, and about 100 yards ahead of me were 15 or 18 large wolf-like Eskimo dogs. For a moment I knew hardly what to do to save the herd. I called to the men after the herd, who were hardly within hearing distance, to stop driving at once. Then I tied my deer right in front on the trail and ran for the dogs, which were all asleep, grabbed three of them by their necks and before they knew or realized what had happened they were inside the door in an Eskimo cabin. All the Eskimos were at once out and upon given signs they caught a dog or two each and held them until we could dispose of them in a safe place while the herd passed. This was all done far more rapidly than it is written, and not even the Eskimos really understood what was the matter before the next few minutes the whole herd spread out on the ice right where the dogs had been. The guides did not know of that village so as to give a word of warning before time. They are good boys, it is true, but they are not qualified as guides on this trip. To-night Johnny and Strong have gone back to the village passed, which is at least 5 miles up the river from our camp. Plenty of spruce and bushes on our feeding ground. When is it to be otherwise?

Thursday, December 22.—The morning promised a fair day, and so to take advantage of the same we were ready for a start even before daylight. Bahr and Strong took the teams and went on ahead along the river. Jensen, Raisanan, Sara, Johnny, and Koktoak went to bring the herd. It had during the night strolled off quite far, although the moss was good. So as not to unnecessarily wear out my deer, I waited with it on the river where the herd was expected to come down. At 9.30 o'clock it came. Two deer were missing. The one was the fawn with the skinned back and the other was an old worn-out driving deer. The teams having long ago gone onward with camping outfits, provision and all, and we standing still in a temperature of 22° below

zero was not very pleasant. We knew that the sled deer would not be alone, but that other deer always followed it.

So I suggested that I should wait with the herd while five men returned to the woody hills in search of the missing deer. My suggestion was overruled by the herders, who proposed that three men should go with me and the herd and that two only return to the brush-covered hills. These two men were Sara and Raisanan, both good skee runners, so we thought that they, when finding the lost deer, could soon catch up with the herd. We then traveled slowly but steadily onward, and have covered a distance of about 16 miles in the course of seven and one-half hours. Our teamsters, Bahr and Strong, we overtook at noon. We could not have done it if they had not stopped and waited for the herd. Sara and Raisanan caught up with us at 4 o'clock and traveled with us in the moonlight until 5 o'clock, when we found moss and made camp.

They have the sad story to tell that they found two deer, but that they were so scared that the men could not get close enough to them to see which ones they were. Those deer, however, ran to the river, they say, and followed our trail as far as they could be seen. So the men took for granted that they joined the herd, and so they resumed their looking for some more, because they were of the impression that the two which were found were not the ones missed. They did not find any more, and so had to return, in order to get shelter for the night. The two deer found did not come to the herd either, so they must have stopped somewhere else along our trail. These conditions naturally dictate another lay over. But are we justified in stopping now when provision is getting so low that we can not eat as much as our appetite craves in this cold weather? Among us, three men in my tent, we had one-half a can roast beef, a piece of bread, sirup, and tea for supper. Yet are we several days off from Bettles, and may be that we will not be able to take the herd there at once, because of burned ground, which we are likely to have trouble with. The day has been clear and beautiful, but whew! it is cold. I have had the hardest time to keep my nose from freezing to-day. The thermometer showed -38° in the morning and to-night it shows -42° . The same kind of feeding ground in the woods, but the moss is plentiful.

Friday, December 23.—After an almost sleepless night—thinking what to do about the lost deer—I decided to stay by the herd during the day and keep one man with me while six men returned over our yesterday's trail searching carefully all the way, and also continue so as to take in all of the previous night's feeding ground. As it is impossible to return the same day, the six men should take tent, stove, provisions—of what little we have—and sleeping bags along. Three deer could pull the light loads and one extra go loose for coaxing the

others when found. Thus decided, the men were fitted out and four deer harnessed, and off they went at 9 o'clock. The herders themselves thought that five men would be as good as six for that purpose, and so Billy Strong and Koktoak stayed with me while the rest of our number made up the searching party. It took us, who were at home, more than four hours to find and gather the herd to-day. As stated yesterday, we have here plenty of moss, but it is growing in a forest which must be hundreds of years old, and the brush is so thick that one has, at times, to crawl on all fours in order to get through. We have cut away brush so that the driving deer could get plenty to eat. The cold continues to-day. It has been -43° all day. Our stove is getting to be so bad that it is hard to keep warm enough in the tent. I have to keep the mittens on while writing to-night. The searching party has not been heard of or seen yet; of course they are not expected, either, until to-morrow evening, unless they should have met with an exceptional success.

Saturday, December 24 (9 o'clock p. m.).—They have returned, and in reward for their trouble they brought back five females and two males. All of them had been left behind in the woods day before yesterday. The fawn with injured back was also found yet living, but so wild that no one could approach him. After some fruitless attempts to lasso him he ran off and disappeared in the woods. As it was not without danger of getting the seven also scattered again, and knowing that the young one could not live long in this cold weather, they let him go and took what was sure and returned to camp, where they arrived at 6 o'clock. Our dinner was served, and consisted of one-half a can roast beef, bread, butter, and coffee. Our coffee was all gone some days ago, except just a little, which was purposely left for Christmas. Raisanan does not feel quite well this evening. I have given him medicine this evening in hopes that he shall not be taken down entirely. The pleasure has been given me, in honor of the evening, to practice my skill as a barber on Mr. Bahr. The temperature is still at 44 degrees below zero. No wind, but a gentle draft through the river valley, such as is so often felt and dreaded by travelers.

Sunday, December 25.—Bahr and I were out in the early morning to look for a better place in which to put the herd this afternoon, so as to be able to get away in the morning to-morrow. Strong, Johnny, Koktoak, Raisanan, and Jensen were sent to gather the herd and to bring it down on the river that we might be able to see them all and to detect if any are missing. As the herd has been here now nearly three days, the trails of its roamings about in the woods are becoming very large, and for every hour of its stay the danger of losing some deer is increased. About 1 o'clock the herd came on the ice, and as we thought all of the deer were there, we proceeded to drive it off about $1\frac{1}{2}$ or 2 miles down the river to a place decided upon by Mr.

Bahr and myself. There is plenty of moss and the brush is not quite as thick as on the former place. Then the trail will also be that of one night only, and consequently the work in the morning will be more readily accomplished. Our camp remains unmoved over the night, as we here have plenty of moss for the driving deer. The temperature is -44° . Phew! It is rather chilly to live in tent now. At present it is a puzzle to me where to put my nose so as to minimize the danger of losing it altogether on the trail. It is already frozen some, and I can hardly save it in any other way but by holding it in my hands all the time. We have had our Bible reading and prayer, supper is over, and we are ready for the sacks a little before 8 o'clock p. m., Christmas day.

Monday, December 26.—Four o'clock all men were up preparing for a start early as possible. Because of the bright morning moon it was possible to begin the gathering of the herd at 8.30 o'clock, but on account of the forest it took another hour's time before the herd reached the river. Because of the three days' rest the deer were real lively this morning and the travel was easy compared with what we are accustomed to. After a couple of hours' travel we came to a native village of several well-built cabins and about 20 inhabitants. As we all were practically out of provisions, an attempt was then made to purchase the most essential articles, as flour, sugar, fish, rolled oats, rice, etc. Fish was the only thing that could be obtained for money; surely they knew what they wanted for it also. Seven medium-sized white fishes, 18 or 20 pounds, cost \$4. Had we had anything else to eat I would certainly not have paid such a fish price in this portion of the world. But then the same man who sold the fish was willing to loan us 8 pounds of rice, one-third sack of corn meal, one-half pound baking powder, one-third sack salt, 1 piece of bacon, 1 can evaporated potatoes, 50 pounds flour, and some sugar.

The flour and sugar were at the mouth of Alatna River, but there we could get it when passing by. With good hopes of reaching that place before evening we then started off again in good cheer, happy to have been able to procure the necessary provisions. We had, however, not traveled very far before an unexpected and unfortunate delay occurred in that a female fawn dropped to the ground while crossing a little portage on the river. Upon examination it was at once ascertained that the right hind leg had sustain'd a compound fracture. How it happened, no one knows. Probably the deer had gotten the leg caught between sticks or "niggerheads" and then jerked the leg off. As it could not walk at all we had to put it on a sled and haul it along until evening, and then butcher it. If a suitable place for the herd had been known of then it had been better to have made camp at once. But not knowing this we traveled on until

shortly before 3 o'clock, when good moss was found and so we made camp. Bahr had to officiate as our butcher, and surely he did the job both quickly and well. If we had been able to foretell this sad accident then had there been no need of buying any fish and of paying the native exorbitant fish price. We divided the meat equally between the two camps.

It being a very small deer it did not amount to much; still, as an article of diet it is fresh and delicious. Bahr, Koktoak, and I have had a feast on it already this evening. The day has been bright and beautiful, but no sun. The temperature was -44° this morning, and it continues the same still. Oh, how hard it has been to keep the nose limber! It is also quite troublesome this evening to write down these lines because of not having any candle. The stove, being badly broken, smokes furiously as soon as the door is opened. Thus, having practically no light, I tried our last piece of lard. It served quite well melted on a saucer, and a rag soaked in it burned nicely; but now it is also dry, and darkness only is left us. Of that we have plenty.

Tuesday, December 27.—Bright and early—yes, at 2 o'clock—did Koktoak start the fire this morning. He was too cold to sleep, so it was best for him to keep the fire going. At 6 o'clock the temperature suddenly changed for the milder. Instead of -48° , as it had been during the night, it went up to -26° , and soon after that the starry firmament was veiled with a curtain of light fog, which gradually grew denser and denser until, at 9 o'clock, when a little daylight was due us, it was just as dark as our night without the moon. Consequently the herd could not be gathered until after 10 o'clock. The teams managed by Bahr and Koktoak went on ahead before daylight. We other six in our company waited to bring the herd as soon as the light permitted. About 10 o'clock a light southerly breeze began to blow, and was felt very keenly about the nose and other exposed parts of the face. Luckily for us the temperature continued to rise, until it is near zero this evening. The wind brought snow, which has fallen heavily nearly all day and in the evening also.

At 2 p. m. it grew very dark, but we continued our march yet an hour—now being on the Koyukuk River, which has here well-defined banks, so that the deer were easily kept together—and to our great joy we found moss in abundance on the left side of the river and probably 5 or 6 miles up from the mouth of Alatna. Our guides knew nothing about it, neither did they know that here is also much burned ground right alongside of us on the river bank. At times during our travel have they told us that not any portion of the Koyukuk from Alatna to Bettles was burned, and again, that it was all burned; other times they have truly said, "We do not know." It remains now for ourselves to find it out as we go along. On passing

by the village at the mouth of Alatna we got the 50 pounds of flour and 13 cups of sugar belonging to the same man we got the other articles from yesterday. All is to be paid back with like goods on our return. Jensen complains very bitterly of soreness in his left leg this evening, and declares that if he is not better by to-morrow he must have a deer and a sled so that he can ride. So that on the eve of December 27 we finally made our first camp on the Koyukuk—the aim of our struggle for one day less than seven weeks.

Wednesday, December 28.—Our rest of last night was greatly disturbed by some reindeer. As has been mentioned before, many of the deer we have are just as fond of fish—dry or fresh, either—as any Eskimo ever can be. And those it was which evidently smelt that some fresh fish had been in the sleds, because they were scratching away all night to get it. Their efforts were all in vain, though, because we had taken the precaution to bring in the fish as usual. Bahr, Kok-toak, and I were up and out in turns to chase the deer away. Of course it could be done, but in a few minutes they were all back, tearing about just the same. The snow continued to fall all night, so to-day we have had at least 10 inches of loose, new snow in which to tramp. The temperature has been about $+10^{\circ}$ all day. It has been cloudy and snowing occasionally. A light easterly wind has been blowing. As early as it was sufficiently light to gather the herd we did so and started our march. An extra driving deer was caught for Jensen that he may ride for a change and rest his sore leg. Truly we have had a hard day. A portage of about 7 miles, most of which was overgrown by an impenetrable thick brush, had to be struggled through. At the time we again reached the river Koyukuk it was 2.30 o'clock and dark. No moss to find all day.

It seems that most of this portion of the country is burned. We could not think of stopping without moss; so onward, onward was the only thing of which to think. And as the river is wide and well bordered by steep and high banks the danger of going ahead in the dark was not so great, but it was exceedingly tiresome. At every possible place, Billy, Johnny, and myself were running to feel for moss. Our efforts met with failure dozens of times before 7.30 o'clock. At that time we found very little of the precious article sought. Still a little is always better than nothing, and so camp was made. Supper is now over and we are ready to retire at the hour of 12, midnight.

Thursday, December 29.—Six o'clock this morning our breakfast was ready; the clouds had disappeared during the night and the stars shone beautifully. The moon, now being small and hidden from our view by the hills, did give us but little light. Hardly had we finished our breakfast before the stars were again hidden and the snow fell in large flakes and very thickly. Naturally it grew dark again, so to

look for any deer could not be thought of before 9 o'clock. But so as to be ready when it should be possible to work, Raisanan, Sara, Koktoak, and Billy had gone up the hills, which were very steep and hard to climb.

Meanwhile Bahr, Johnny and myself prepared the teams. Jensen has been invalid to-day also. Bahr and Johnny were to take the teams and go on as fast as they could in search for moss, so that when we came with the herd we would know where to put it to feed without delay. Their feed during the past night was very poor, indeed, and after having traveled much over 500 miles at one stretch it became really a serious thing not to have plenty of food for a night. We are not positive either that there is any for 35 or 40 miles more, the distance yet left of our journey. Before leaving camp Mr. Bahr had as his duty to go back and car fully examine our last night's trail to see if possibly any deer had gone back. While he did so I started for the hills to join the four men in driving down the herd. After a while I met Sara and Raisanan in the woods with a few deer—how many no one could tell for brush—but they were far from what they should be in number; that we understood. Those deer were then left practically where they were, while we all joined in searching for the rest of them.

Koktoak and I took the one side of a trail to follow out while Billy, Raisanan, and Sara took the other. But we had not gone long before all trails separated and all except Koktoak and myself became so widely parted that our lungs were too weak to give any further evidence as to each other's whereabouts. The brush was thicker than what I have seen at any place before on our journey. We actually had to creep through in many places and how the deer had been able to get through such thickets is and remains a wonder. They had gone many on one trail, to and fro in every direction. It seems as if they had done nothing but walk all night. Finally the trail which Koktoak and I had followed came back to a place where some one of the Finlanders had gone before accompanied by the dog. Seeing this we deemed it a worthless work to follow their trail exactly—we had then long been so far apart that it was impossible to hear each other's calls, so we crossed the trail and tried to gain exit to the bluffs to enable us to see out over the river. Those hills must be between 300 and 400 feet high, and they came right out to the river bank. Some of them have almost perpendicular walls.

As we reached one of these high bluffs it had stopped snowing and we had a good view over the river for a distance of probably $2\frac{1}{2}$ or 3 miles. Six large reindeer were seen to march slowly and steadily backward over our yesterday's trail, but as yet they were not far away. Just as we, Koktoak and I, stood there considering what next

to do, a sound of someone calling was heard. Koktoak, answering the call, went on in the direction from where the sound had come, while I went in search of the few deer we first found and which were again left. My plan was to take them down on the ice as quickly as possible and then run after the six which were going back on the river. By the time I reached the deer Billy had also arrived there, and jointly we drove them down upon the river, a task which took a great deal of both patience and endurance. At 11.30 o'clock we reached the river, counted the deer and found that they were 60 in number. Billy returned at once in the same direction as Koktoak had gone, and took my sled deer and ran after the six which we saw go down the river. By this time they were so far away that I could not see them. Having gone about one-half a mile on my chase, a deer, which is well known for its leadership, appeared on the ice a short distance ahead of me.

Another and another came forth from the heavily brush-clad hills until a number of about 200 deer were all down, and after them came Raisanan, Sara, and Koktoak. If ever I was happy, it certainly was at that moment. No time, however, for any long conversations. The men were asked to drive the two flocks together and to call Billy, while I ran after some deer which marched back. Forty minutes' hard running took me and my deer within reach of the six. After a little trouble they were stopped in their onward march; and there being three sled deer among them I was successful in catching one. I tied that one to the other end of my only halter line, with the intention to lead the two and then more easily drive the five deer. But the new one was so bad to fight both me and my gentle driving deer, that I had to let him loose again. During all these performances we had gone almost across the river and again upon going back to the old trail I thought that I saw some more back trails. The snow of the morning had made it almost impossible to see and tell for sure, but I suspected it. And then at that very moment, when thinking of leaving the seven deer I now had and go farther on the river in search of some more, Johnny appeared at a bend of the river, only a short distance below and ahead of him a flock of 34 reindeer.

I did not then know that Bahr had discovered these tracks before he left and so sent Johnny off in search of those deer. Jensen had gone with Bahr on the sled, of course, and so no one was left to tell the story. Johnny and I returned together and joined our flock of deer with the others. As far as we are capable of seeing and understanding all the deer were now at last gathered. The day had been and still remained dark and cloudy. It was 1 o'clock before we were ready to go onward. Dark, and not knowing how far it might be to any moss, all deer hungry and tired, the burden of responsibility pressed rather heavily. There was only one thing to do, and that was to go onward as speedily as con-

ditions would allow. So having my position, with one driving deer in the lead, we plod on for two hours. Then we met Bahr. He came walking back to see what had become of us and the herd. He had found moss, plenty of it, and of the very best quality, right under a burned hill and only one-half a mile off from our trail. Four of us then made camp at once, while other four drove the deer to the moss.

As stated above, Jensen had joined Bahr, and they had had their troubles while the rest of us had ours. A dog team had come and with it one loose dog, which had caused considerable trouble before he was caught. The owners were Koyukuk Indians, and either they did not care or if they did not realize the danger of a loose dog among the deer we do not know; but they did not make any effort to catch the dog before Mr. Bahr had to threaten to shoot him.

Johnny and Billy are gone this evening to Union City, which is close by, to find out from other natives if moss is to be found between here and Bettles. If so, then we intend to go on to-morrow, but if there is no moss then we stop where we are until the deer are rested and well fed. Then we pick moss enough for the sled deer and take it along for luncheons, so that we can make the remainder of the road in one stretch. Seeing that we travel on the river and having no more portages to make, it is possible to go on at night also. In fact there is no choice about it, but it is simply a stern necessity, if conditions be such as anticipated. Just as we are ready to retire at the hour of 10 o'clock, Billy and Johnny return from Union City with the news that there is plenty of moss on a certain hill beyond Peve. Decided to go on to-morrow to the next moss place. The temperature was -5° this morning and it is -10° to-night.

Friday, December 30.—At 4 o'clock I began to stir about so as to get breakfast ready in time for an early departure. Six o'clock the morning meal was served and an hour later all the men—except Jensen and I, who remained at home to break camp and have everything ready—went for the herd and driving deer. As they were a distance off it took them quite a while before they returned. Nine-fifteen we left the camping place and three-quarters of an hour later we passed Union City to our right, and 12 m. we likewise left Peve behind. A few miles above Peve was a little spot where moss was found, but at some 3 or 4 miles farther off was the place where we were told that there was "plenty of moss." So this latter place being nearer our destination and a hope to find "plenty" were both strong stimulants which made us press on till we at 4.30 o'clock reached the desired place. To our great fortune the herd was not allowed to leave the ice before we had seen the moss ourselves.

This saved us from a similar misfortune as that of night before last. Billy, Johnny, and myself were seeking that precious stuff for over half an hour, but imagine our disappointment when not a bit of it was

found. There was only brush to the same thickness as we had encountered forty-eight hours ago. And as no food was found, the only thing to do was to march on. So we moved forward yet for about one and one-half hours, while diligently searching everywhere for moss without finding any, and having then traveled nearly 20 miles in deep snow and had neither food nor drink since 6 o'clock in the morning, we decided to stop and make supper at 7.30 p. m. It is at that time I write these lines. The deer are resting on the ice with nothing to eat, and as soon as our supper is over we will again march onward. The weather has been fair all day; it has been a little cloudy. The temperature this morning was -10 degrees and now it is -8 degrees.

Saturday, December 31.—At 10.30 p. m. yesterday we were again ready for traveling. One driving deer was tired, so it was let loose into the herd and another taken in its place, to make the remaining distance of our journey. Hardly had we traveled two hours before the drivers of the herd called me, who with my deer walked ahead, to stop. "Something is wrong." Tying my deer and posting a few men all around the herd so as to keep it together, I returned to where Raisanan was standing. There lay the deer which we had just liberated from its load, which it had pulled all the way from Unalaklik to within a few miles of Bettles. It had fractured its left front leg and was now unable to move. Of course there was nothing to do but to butcher it as quickly as possible in order to relieve it from suffering. While yet examining the condition of the deer, Bahr, Sara, and Jensen, the latter as an invalid yet, arrived with the teams. We all felt sorry about this end of the fallen, faithful worker. Still with all our sympathy the knife was the only remedy.

The reason for the accident was this: Old sled deer are never liked by the herd and they never seem to have room there. So this deer—commonly called Billy's Leader—was pushed and chased everywhere. Upon a sand-bar in the river was a large pile of driftwood gathered, and snow had filled in and covered a great portion of the same. Then the deer, being pushed upon by other deer, came into a trap, as it were, with consequence as stated. Bahr was authorized the butchering of Billy's Leader, while we (five men) again struggled onward with the herd until 4 o'clock in the morning. At that time it became almost impossible to go on any further. The deer began to be very hungry, and would stampede in every direction to such an extent that we could not possibly keep them together in a bunch. Fortunately, we at that time found a grassy spot along a slough upon which we traveled, and, with the wildest excitement, did they all begin to scratch there for something with which to fill their empty stomachs. Even there it was a bare possibility to keep the herd together for about half an hour. Then we were again obliged to go on and exert ourselves to the utmost of our ability in order to keep the herd collected.

Since Johnny left we had only four men in our company; we had no tent and no provision. So we started a fire whereby to keep warm after stopping. By the side of it, the fire, we decided that as soon as rested a little and it became light enough two men should go to search for Johnny, because we all feared that, tired as he was, he should have sat down to sleep somewhere and had frozen. Just as the plans were all ready, who should appear among the bushes right by us but Johnny. The fact was simply this: He had gotten lost in the brush and could not find the river again before he saw our fire on the bank, and was guided by it. Shortly after John's return, Bahr, Sara, and Jensen arrived also. Their deer were unharnessed at once for feeding, and the tents put up for the preparing of our breakfast. At 11 o'clock everything was again ready for another start, and also a finish of our journey. Only 5 or 6 miles more and we were at Bettles in the evening of December 31, 1904.

The tired deer rode those last few miles. The herd was driven up to the mountains on the left side of the river, below Bettles and about $2\frac{1}{2}$ miles away from the village, while the sled deer with their loads were all taken right into Bettles. The local superintendent, Mr. Cram, received us gladly and pleasantly. The herders were, through his efforts, given a cabin for their use while resting a little and drying of tents, sleeping-bags, etc. Mr. and Mrs. Cram invited me to stay right with them over New Year. I am sleeping in the school room. Oh, what a relief to be here with the herd.

Sunday, January 1.—This day has been given to complete rest for mind and body. I slept till 10 o'clock. By this time the herders had already gone to the herd with the sled deer and came back at noon reporting favorably about the herd and place. The only thing which worried them was that a dog seemed to have scented the deer and started off in that direction. But a man had evidently seen the dog and ran after and brought the dog back without having caused any disturbance among the deer. Upon hearing of this Mr. Cram and I took the precaution to go over again to the native population and impress all of them with the fact that all dogs must be kept tied as long as the deer must of necessity remain so close to the village.

I have been the guest of Mr. and Mrs. Cram all day. A cold but gentle northerly wind has been blowing.

Monday, January 2.—Mr. Cram and I have to-day arranged with the Northern Commercial Company for provision for our return as well as making of a stove for us and also a stove for the Finlanders. We have also made a trip on snowshoes together up John River quite a way to find out what moss, if any, was there to be found. But the night came on, so we had to return without being able to locate any specially good feeding ground for the herd. All the ground in the immediate vicinity of Bettles seems to be burned. By the time of our

return Sara and Raisanan, in company with our two guides had also just returned from the herd. They had been working hard all day without being able to gather quite all of the deer. The same dog that had been on the way to the herd yesterday had gotten loose and gone there during the night. The owner, a native, discovered his absence and ran right after him, but was unable to catch the dog before he reached the herd. Still, so far, we know of no deer being bitten by the dog. To-morrow that dog owner is, without wages, going along with five of our men to gather the balance of the herd. Sara suffers from toothache to-day. He wanted the tooth pulled but there are no forceps to be had in the whole Bettles community. I have had some Eskimo patients to-day. North wind, moderately strong, but cold. It is star-lit and nice this evening.

Tuesday, January 3.—The day has been very pleasantly spent in company with Mr. Cram. We have visited the store several times. A portion of our return provision is already laid aside. Seven of our men have been out looking after the reindeer, and they found them all. After the finding of the whole herd they drove it some miles farther away, up among the hills to the west of John River. At the new place is plenty of the finest moss one wishes to see. This latter locality will likely be the fawning ground. Bahr and Koktoak are now working on our harnesses for the return. To-morrow all the sleds, pulkhas, etc., are to be looked over and then we are ready for our departure for the sunny south. Mrs. Cram is kindly baking some bread for me and also helping to sew some new sled covers for our return. The weather has been mild all day and this afternoon it became very cloudy, looking much like snow to-night.

Wednesday, January 4.—A beautiful day. No wind at all but quite chilly. Our harnesses, sleds, halters, etc., are all ready this evening. Our beans are cooked and frozen. For a non-Alaskan I suppose this expression seems queer, and therefore let me state that we always cook the beans, pour off the water, and then freeze them at home. On the trail they are just warmed and then ready for eating. The provision is all picked out, but it is not yet packed. I have spent the greater portion of the day in the schoolroom, greatly enjoying the practical methods by which Mrs. Cram teaches the natives—young as well as old. Her scholars are not many, nor are they permanent. And this latter condition naturally makes the work very hard and trying; in fact, so much so that few would have the courage and endurance to keep on day after day under similar conditions.

Mr. Volney Richmond, Northern Commercial Company's agent at Bettles, had invited me for dinner to-day, and we, indeed, had a pleasant time in the company of Mr. and Mrs. Cram, Mr. Richmond, and Mr. Horton—memories from the far north which will long live.

Still, in all the pleasures of the north a longing for the beautiful and

pleasant Unalaklik possesses me to the utmost. A man by the name of John Tunejaluk—a married man who has a 14-year-old daughter—has this day entered as an apprentice at the Bettles herd. Tunejaluk is the first apprentice here.

Thursday, January 5.—The morning was bright and beautiful. Long before daylight the herders all went out to gather the herd, while Mr. Cram and I attended to some business at home. Later we also walked to the herd for inspection of the same and to turn over the responsibility and care of the same to Mr. Cram. Our seven deer for the return trip were lassoed, and moss taken home for feed over night. They spent the night in a vacant cabin next to the schoolhouse on the east side of the same. Bahr and I packed the sleds after our return from the herd. It has been our intention to return with only three sleds and three pulkhas, but upon loading we found that the loads became rather heavy, and so we had to take one more pulkha, which when finished with we can just throw away anywhere when it becomes necessary. It is now 2 o'clock in the morning of Friday. The balance of the night after the loading was finished has been spent in company with Mr. Cram in talking over the herding business and rules and regulations for apprentices, etc.

Friday, January 6.—The night was unusually short because of our late retirement. At 6 a. m. I was again up, loaded my sled, and left the schoolhouse at 6.30 to see how Ole Bahr, Koktoak, and the Finns were getting along. Bahr and Raisanan were up, but all the others were yet in their sacks. Breakfast was soon ready and eaten. The sleds were lined up on the river opposite the school. But before the deer were all harnessed and a final farewell taken to Bettles and its inhabitants it was nearly 11 o'clock. Seeing that we now know the road and where the precious moss grows, we could in good cheer travel onward where we knew would be our camp. Before dark we made very good time, but about 4 o'clock it grew cloudy and dark, making it very difficult to see and follow the trail. Naturally, that delayed us much. Then again before the deer are all adjusted to their proper places in the teams they do not travel so well for any length of time. We had to stop and change the position of two of Bahr's deer, and after the change they did much better. Mr. Bahr has driven the five deer to-day, while Koktoak and I drove only one each. In the afternoon we met "Big Charley" and one other native on their way to Bettles.

Charley is the man who loaned me the provision on Alatna River. All that we did borrow is repaid and left by Mr. Cram for Charley to receive when he arrives there. The \$4 due him for the fish was given to Billy according to their own agreement. At 8 p. m. we made camp about 5 miles north of Peve, on the Koyukuk River, having traveled about 25 miles this short day. At times we have had a very sharp

breeze during the day, but this evening it is perfectly calm and it is also much milder. The thermometer shows $+20^{\circ}$ and the snow falls heavily. We really fear that our deer will play out before we reach the Yukon, especially if any more snow comes. To start back now so soon with deer which have just gone over or about 550 miles, and now pull loads every day, is really too much; but it is the only thing we can do.

Saturday, January 7.—Due to the fact that none of us slept much the previous night we really overslept this morning. I was the first one to stir, but it was then already 7.30 o'clock, and before we left camp it was 10.30 a. m. Still it did not matter, because we could go only 12 miles to-day. Had we gone farther, then had there been no moss at all for over 20 miles, and in 8 or 9 inches of new and loose snow it would have been too much for the deer that have now traveled so far. This evening we are camped at the place where we so fortunately found moss on December 29, $2\frac{1}{2}$ miles below Union City on the west side of the river. It had continued to snow all of last night so that our sleds were all covered over this morning. The tent was wet through so that the water ran everywhere, on sleeping bags, clothing, and provision. At the time of breakfast it stopped snowing and at once we started a very good fire so as to dry the tent a little. This attempt was crowned by partial success, so that we could without danger of breaking pack the tent. It has remained cloudy all day, but no snow has fallen. This evening the temperature has fallen to -5° , and the clouds have cleared away. Mr. Bahr and Koktoak have been out picking moss to have along for lunch for the deer to-morrow, while I have mended socks and various other articles which are very essential for trail life. Have also written Mr. Cram a letter this evening and will send it as soon as an opportunity presents itself.

Sunday, January 8.—At 4 o'clock Koktoak made fire and shortly after Mr. Bahr began the preparations for breakfast, in my stead. And long before daylight were we on the trail plowing our way through the deep and loose snow. Camp was again made at 3.15 p. m. on the same spot where we were located on the evening of December 27. A gentle southwesterly wind has been blowing all day, and the snow has fallen in large flakes most of the day. Still we have done well in having traveled at least 20 miles. The sun was really visible to us this noon, the first time for about a month. Half of his disk shone forth in more than usual splendor right under a thick cloud in the southern horizon. We really were enlivened by a few moments' look at the source of physical life. Shortly before dark, the clouds cleared away and behind them had the moon, which we had been longing and looking for, been hidden. She is new to-night, so if the weather otherwise be agreeable the moon will certainly help us much over the unknown trail, which we now are about to take.

between the mouth of Alatna and the Yukon. We have this evening again picked three sacks of moss so as to have enough with us for one night, in case it happens that the ground be burned where we go.

Monday, January 9.—We began our breakfast preparations at 4 o'clock and at 7 we were ready to begin our onward march. The snow is continually getting deeper, and almost too deep for traveling where there is not a trail. It has been snowing continuously all night and day, not very heavily, but by the steady continuance our trouble is increased just the same. The village at the mouth of Alatna, Bergman, and Arctic City we have all passed during the day and this evening, it is too dark to be certain. Our camp is by the mouth of Old Man River. This river empties its water into the Koyukuk from the south a little below Bergman. For three hours did we search for moss, and at 6 o'clock we had to camp on account of darkness without having found any. So our precautions of last night in taking moss along with us proved of great value. We had three large sacks full of the sought stuff, so our deer need not starve over night, and at daylight we might be more fortunate. After supper, 7.30 o'clock, Bahr and Koktoak went out again in search of moss and have not returned by 9 o'clock.

Almost all the hills are swept by the worst enemy the reindeer industry has, viz, the fire, and it requires the most careful searching to find a small patch here and there which might have escaped its rage. The question may here be asked: How can you see to look for and to pick moss when it is too dark to travel? It is done this way: An old butter can is punctured on one side and a short piece of candle is put through the hole so that the top is in the can. A match is applied and by turning the bottom of the can toward the wind it serves the purpose of a lantern. A light easterly wind has been blowing all day and it continues still. Before daylight this morning we met an Indian on his way to Bettles, so he carries my letter to Mr. Cram.

Tuesday, January 10.—Half-past 10 o'clock last night Bahr and Koktoak returned. They had found some moss, but, due to the shortness of their candle, had not been able to pick more than two sacks full. Still, the two sacks, in addition to the three which we already had, proved quite sufficient. The snow had fallen so heavily during the night that this morning our sleds and pulkhas were totally buried. Having no trail whatever, and being on unknown ground, we did not want to leave camp before daylight. So, at 10 a. m., we made an effort to travel, but the snow fell so heavily that we could hardly see across the river. Koktoak walked ahead with snowshoes and one deer with a very light sled. Next came I, also with snowshoes, and had six deer after one another. Bahr walked off in search of moss. After having trudged on for about half an hour Bahr was heard high up on a hill. He had found good moss and plenty of it. At once we

decided to stop over until the snow ceased to fall and give our deer rest and plenty to eat. We have again picked six sacks of moss to bring along in case we should not be able to find any at our next camping place. As I have not been quite well to-day, the rest suited me as well as it did the reindeer. The snowing has continued all day, but not quite as heavy this afternoon as in the morning. The temperature has been varying between $+15^{\circ}$ and $+20^{\circ}$. A gentle north-easterly wind has been blowing.

Wednesday, January 11.—The same weather has continued to-day. At 7 o'clock it looked as if it were going to clear up, and we prepared for traveling, but soon it was again snowing as heavily as ever. So we have had another day of rest. This evening about 6 o'clock the stars began to show themselves and the moon came out a little later. The thermometer has also begun to go down a trifle, so probably we will again get weather which will permit us to advance toward home and our dear ones.

Thursday, January 12.—I began to bake and cook at 4 o'clock this morning. At 7 a. m. sharp all things were ready for leaving camp and all three of us were really in good spirits, because this was the brightest morning we had had for several weeks; and two days' rest had also done us much good. And the deer, we hoped, after the rest and good moss they had enjoyed, should be able to go on nicely for 75 or 100 miles before another rest was needed. Yes; such were our hopes! But in the course of a single hour all those hopes had vanished away. The newly fallen snow lay from $1\frac{1}{2}$ to 2 feet deep and very loose, and the old snow was not packed sufficiently to carry the deer on it, so they sank through both layers to a depth of about 3 to $3\frac{1}{2}$ feet.

From the beginning of the day I walked ahead to break trail; but so as to make it at all possible for the deer to follow I had to return beside the first trail and then the third time walk in the middle of the two trails. Then Koktoak came on his snowshoes walking ahead of his deer to do what he could in tramping a road. All the lightest loads had been placed first to pack the snow for the heavier ones. Bahr drove six of the deer to-day.

From 7.30 a. m. until 4 o'clock this evening I walked thus back and forth, and still to-night we are not more than 6 or 7 miles nearer our homes than we were this morning. It is indeed not very encouraging! The temperature fell to zero during the night; it has been a little colder during the day. This makes the loose snow just like sand and very heavy for traveling. One of our deer was tired in the course of the first hour out this morning, and at 12 o'clock we were obliged to relieve him of his load. During the afternoon he has pulled an empty pulkha. It was our intention to leave that pulkha, and we might soon have to do it still, but in case the deer should improve till to-morrow

then the pulkha will be well to have for lightening the other loads. Especially as we dare not travel without having some moss along, the seven sleds are none too many.

Fortunately we found good moss this evening again; but the Koyukuk is, indeed, very uncertain in regard to reindeer moss. And should we in addition to the heavy trail not be able to get food for the deer, then there will soon be an end to our traveling. With my nearly 6 feet long and 1 foot wide snowshoes I sank from 11 to 13 inches in the snow to-day. This shows the condition of the snow in the interior of Alaska. As soon as we had made camp I prepared coffee, bread, and butter, which we all enjoyed immensely. Then while supper is being prepared Bahr and Koktoak took a little stroll on the snowshoes to make trail for 2 or 3 miles to start on in the morning. It is now half-past 7 and they have not yet returned, so I suppose they have gone farther than what was their intention at first. During the evening the temperature has gone up to nearly +20° again, and the little patch of the heavens visible between the forest-clad hills is now all covered with heavy clouds. Possibly it means more snow. This moment the voices of Bahr and Koktoak are heard at some distance, so I had better discontinue this duty of mine and set the floor. This latter corresponds to what is ordinarily called "set the table;" but as we do not use tables we set the dishes and pots right on the floor and then we place ourselves in a ring around them. Good night!

Friday, January 13.—The last night's rest seemed unusually sweet. In fact, it was so sweet that none of us woke before half-past 5 this morning. Breakfast was prepared in a great hurry, and by 8 o'clock we were ready to leave camp. I walked ahead of the teams about twenty minutes to prepare the trail. I followed Bahr's trail of last night as far as it reached—about 2 miles—and so far it was easy; but after that it became an awful task to walk in the deep and loose snow to-day. The reason why it was especially heavy was the mildness of the weather. It almost rained this forenoon. The snow clogged to the snow-shoes and made them as heavy as if they had been centner weights hung on the feet. Then the walking of the trail, not once, but three times, and only the last time to be benefited by the previous work, makes one doubly tired. At noon I was almost ready to quit my job and look for a place for camp. But for the second time on this long journey—the first time was near Shaktolik, November 13—did we take the trouble to make tea, and have a bit to eat, while the deer lunched on a sack of moss.

This, the tea, refreshed us all and invigorated even me so that I felt like tramping more trail. We trudged on until 5 o'clock, when, well satisfied with the day's work, we made camp. The distance traveled we judged to be about 9 miles. It has been a dark, cloudy day until 3 p. m., when the clouds cleared away and the moon, just half, shone

forth. It was $+28^{\circ}$ this morning, but to-night it is down again to $+12^{\circ}$. No Indians have been seen along our way yet, and it is difficult to say when it will be possible to get any help in making trail. The deer which refused to work yesterday has done better to-day again. It has pulled a light load all day. Where we camp to-night the mountains come close to the river on the east side, and on the same we found food for the deer. We ourselves live right under the river bank for the night.

Saturday, January 14.—Mr. Bahr prepared breakfast this morning and had it ready at 6 o'clock. But as some of our snowshoes needed mending, it came near to 9 o'clock before we left camp. The temperature had, during the night, fallen to 6° below zero. This change, after the soft spell of yesterday, had helped to settle the snow a little and therefore the traveling was a trifle better to-day. At 1 o'clock we stopped for tea, while the reindeer had their luncheon; and at 4 p. m. we made camp under a high mountain again to our left. The moss has been plentiful all along our road to-day, and it is so where we are located this evening. Mr. Bahr left his deer also at Koktoak this morning and took his place by my side making trail so that I need not go the way more than one time. This helped me very much, and to-night I am not half as tired as I am used to being. During the afternoon a strong northeasterly wind began to blow and almost swept clean the greater portion of the river. Never has a strong wind served us better than just now. We only hope and wish that the same condition might be true for the remaining distance we intend to follow the river.

Sunday, January 15.—The wind was shaking our tent quite well all night long. Camp was left at 9 a. m. and the same strong wind continued to blow. As the days are really growing noticeably longer, we feel like being able to afford making it a steady practice to stop for tea and a little lunch. We had lunch to-day at 1 o'clock. This performance takes as a rule one hour, but after that we feel really as well as we do in the mornings, and three or four more hours of snowshoeing does not seem one-half as toilsome as it otherwise is in the afternoons. All the country around where we have traveled to-day has been burned long ago and as a consequence no moss is found, and we had to tramp and tramp until near 7 o'clock this evening. Then we found just a little of the precious stuff, so that we dared to stay over night. If we had not found this little patch then a second luncheon would have had to be made—one more sack of moss was left on the sleds—and then, of necessity, the tramp would have had to begin anew and continued until more favorable conditions had presented themselves. Bahr and I have stridden along on our 6-feet-long shoes all day tramping trail, so we were quite satisfied to stop at 7 o'clock.

The day has been almost clear. The wind continued until 3 p. m. and then it became perfectly calm. Temperature has ranged from -2° to -6° during the day. The distance traveled we judge to be 12 miles.

Monday, January 16.—We did not get out until 9 o'clock this morning because we made camp late last night. The same conditions continue, viz., the necessity for two men to walk ahead making trail and the constant worry and searching for moss. Here is moss, but where it is to be found no one can tell, because it has all been burned long ago, and where it looks the best, where we have struggled hard to get to it, over deep snow and brush, or up several hundred feet high hills, nothing is found. For lunch to-day we gave our deer the last sack of moss and we did not know where or when we should be able to find any more. We have really been searching the whole day, and thereby we are naturally much delayed in our progress. At 4 o'clock we, at last, found enough for the deer to feed on over night; but there was nothing to pick. Koktoak staked out the deer; Bahr went off farther through a thick forest and high up on the hills to the south of the river in hopes to find more moss and some big enough to pick. Meanwhile I made camp, cut the wood and made coffee. Bahr having found big moss returned with his parka full before Koktoak had finished the staking of deer—Bahr and I were over a mile ahead of the teams when we decided to stop and when Bahr began his excursions. This explains his speedy return.

Upon the return of Koktoak also we had coffee, bread, and butter, and then Bahr and Koktoak took all our sacks, two parkas, and a pulkha and went off to pick moss which we will have to drag along to-morrow in order to be safe. I am home preparing supper and doing the various duties of a housewife so as to have everything ready upon their return, which is supposed to be about half-past 9 o'clock. When we started out this morning the thermometer registered 20° below zero, but soon a change for the warmer took place and the snow fell lightly until noon; then it began to clear up and grow colder. To-night it is 35° below zero, bright moonlight, and perfectly calm. We have to-day seen the sun for two solid hours, a thing which has not occurred since we were south of the Silawik, going north. We really begin to feel that the civilized world is nearer now than what it has been for a long time.

Tuesday, January 17.—The day began and it ended as usually, and the whole space between the two ends has been the same half sleeping walking along. To-night my courage is really low, because it seems as if this traveling never will be brought to an end at the rate we are now trudging along. We have hauled a whole load of moss along to-day, on which the deer feed to-night. It is with great danger to lives and limbs that Bahr and Koktoak at this hour—9 p. m.—have

ascended a steep mountain to pick some more moss to bring along to-morrow. The distance traveled to-day is probably about 8 or 9 miles.

Wednesday, January 18.—The day began with a furious northerly wind blowing down the river and disturbed us quite a little where we were located. Bahr and his companion were not able to pick enough moss last night, and so we had to scratch for some more before starting this morning. All were ready and we left camp at 9 o'clock. We traveled on until 10.30 a. m. when, walking ahead, I found that the river valley widened out greatly and by the hills it seemed as if another river came into the Koyukuk from the northwest a few miles farther down. If that is so, then we had better stop and investigate the matter before we go on any farther.

I climbed the hills to the south in search for moss till the deer and drivers arrived. By the time they did come plenty of good moss was located. We let the deer all loose to feed while we made tea. After tea Bahr and Koktoak made camp and picked more moss, while I took a little stroll on my snowshoes to see where we really were. To our surprise we find ourselves at the upper end of Wait Island at last. I also found an empty miner's cabin and two boats; but not a track or trail of anybody. Coming a little farther down the river the snow was again deeper and very loose. Then in order to have as good a trail as possible I concluded to walk onward as far as I could. This was done and on my return to camp it was already 5 o'clock. Mr. Bahr had then begun to prepare supper, and Koktoak was bringing down some moss sacks from the hills—the fruit of their labor; likely we will not find any more moss now for the distance of 12 to 15 miles or more, so we must have it along on the sleds. During the night the temperature had again gone up to -2° , and this evening it is $+12^{\circ}$. Clouds have covered the heavens all day, and the same is true of the evening. No snow fall. The wind changed at 10 a. m. from the north to the south, but it is not strong.

Thursday, January 19.—Having moss prepared and loaded last night, no delay on that account was caused this morning, and trail being also prepared beforehand, we could start earlier than usual, so just at 7 o'clock our little caravan started onward. Lunch was had at 11.30 a. m., and at 4 o'clock we again made camp, having traveled at least 14 miles. Most of our way has been very heavy with loose snow, and very deep. Bahr has accompanied me as trail breaker all day. The sun has shone on us four hours and fifteen minutes to-day. It has also been perfectly clear and calm, but quite cold. The thermometer registered -10° this morning, but this evening it was -24° . We are all well, but longing exceedingly for home.

Friday, January 20.—We left camp at 7 o'clock this morning and traveled back and forth the curves of the river—that branch of the

river on which we came was extraordinarily crooked—for at least 6 miles till we again, at 10 a. m., met the right branch of the Koyukuk, which we left at the upper end of Wait Island. In other words we had then at last reached the south end of said island. Bahr and I, who had our positions as trail breakers, as usual, walked faster than the deer would walk, so we occupied all spare moments to look for moss on the adjacent hills. Eleven o'clock, just as Koktoak overtook us, we had been successful in locating some good feeding ground. The deer were at once let loose to feed. Koktoak and Bahr picked a few sacks of moss to bring along while I prepared our little lunch. After three hours' rest for the deer we again started for the south at 2.20 p. m. The sun just sank below the horizon while the moon rose above the other, giving us enough light with which to continue our tramp. After about 3 miles' walk we found an old house, the one designated as Batzakakat on the map, in which we made our dwelling for the night. In all we have traveled about 10 miles, but we have had an awful trouble to keep nose and cheeks from freezing. The morning temperature was -38° and at 8 o'clock this evening it is -40° . In addition to these degrees we have had a very light breeze right in our faces all day. No moss to-night again more than what we brought along, so, like last night, we camp right on the river bank and the deer eat from off the sleds. Fortunately we have enough for one good feeding and then to-morrow we will have to do as we did to-day whenever an opportunity is given. Oh, this is dragged and tiresome beyond expression.

Saturday, January 21.—We left camp shortly before 8 o'clock this morning and traveled quite well until 10 o'clock, at which hour we fortunately found moss. A stop of three hours was made while we gathered enough to last us another twenty-four hours if necessary, and meanwhile the deer also stowed away as much as they possibly could. Tea was also partaken of before leaving that place.

The greater portion of our road this afternoon was extremely heavy for snowshoeing, but quite easy for sleighing, on account of a slight crust which had formed on the top of the snow. Bahr and I walked and perspired, and still it was extremely difficult to keep our noses from freezing. Especially is this true of myself. I had to hold my nose in one hand almost continuously. At 4.30 o'clock camp was made, as we hope for the last time, on the Koyukuk River. Rock Bluffs is the name of the place where we are this evening, and probably also over Sunday. We need a day for finding the best road, or rather the easiest place where to make one, for ascending the mountains to the south. The moss is very good and the hills south of us and just to the west of the bluffs, the place we are camped this evening. The reindeer will surely enjoy themselves here over Sunday. The day has been clear and beautiful, but intensely cold. In the evening a moderate north

wind sprang up, and it makes us feel as if the temperature were much lower, although it is really higher now.

Sunday, January 22.—We all enjoyed the last night's long rest. Not having to get up to prepare for an early departure we stayed content in the bags until broad daylight. After breakfast the reindeer were given their attention and then Bahr and myself took a walk on the mountains to see where it would be possible to ascend. Three hours' solid study of nature convinced our minds that if we wanted a way we would have to make one with the aid of axes and snowshoes. So, when coffee, bread and butter were partaken of at 2 p. m., all three of us took the tools with us and began to work near the river bank, and ended it on top of the mountain a little after 5 o'clock p. m. Now the trail is ready, and to-morrow morning do we start right across for the Yukon. Our direction from here is southwest. The day has been clear and nice, but not as cold as yesterday. A southerly wind blew quite hard on top of the mountains, but, of course, it does not affect us in our location at present. Good night.

Monday, January 23.—At 8.30 a. m. our ascent up the mountains began, and at the hour of 11 the top was reached. Then, thought we, have we clear sailing. Yes; for about 1 mile it was so, and then our trouble began. Behind some hills, to which we did not go yesterday, because of never suspecting any trouble there, was another forest of several miles in extent. Bahr and I walked ahead and had one ax with us to prepare the way, while Koktoak came after with our loads. Soon, however, we found our task too heavy, so the teams were stopped, the deer let loose to feed, while we, all three of us, with two heavy axes went on preparing our way. Koktoak soon relieved me from cutting, and he, together with Bahr, continued that portion of our work, while I walked ahead and picked the way, so as to get where we desired to go. Many a time had I to go back and try other places after having found one way either impracticable or impossible to follow out. And so to avoid any unnecessary cutting I had to keep as far ahead as possible and then mark the trail which was to be cut by the two men who came after.

In order to be able to see where to go, I had to climb trees repeatedly to get a view of a little larger field than otherwise was the case. Once, after having made a long trip, as I thought in the right direction, it was discovered to be wrong, and I had to return the same way as I had come for over a mile. I then met Bahr and Koktoak. We had a consultation as to what was best to do, and it was then decided that Bahr go onward in the direction I thought was best and there to pick the best way. Meanwhile Koktoak returned with me to get the deer and loads. By the time we all gathered again it was already 3 p. m. Tea was made with a camp fire very hurriedly, and it was also greatly

enjoyed. We had no way any farther, because Bahr had gone through the woods first to see where to prepare the trail and then cut on his way back. He had done very well, but his ax handle broke and he had to return with the job unfinished. At present he is busy making another ax handle.

It has been an unusually bright and clear day, but bitter cold. Although the thermometer did not go very low it has really been worse than if it had been 50° below zero, because of the northwesterly breeze which has been blowing all day. Before starting this morning we prepared only six loads, and so left one pulkha after us on the Koyukuk. Here has been most excellent moss along our trail of to-day.

Tuesday, January 24.—Bahr and Koktoak left camp at 7 o'clock a. m. to prepare trail. It was somewhat questioned whether we should be able to travel because of a pretty severe northeasterly wind which was sweeping the mountains. This was felt quite severely even in the woods, and then, what would it be on the barren hills? The thermometer registered —28°. Eleven o'clock they both returned and we decided to move, at least out of the woods, which meant 3 or 4 miles. Having once started it is rather hard to stop without doing a day's work, so we pushed on and on not wishing to make camp again until in the evening. But the noses and cheeks have certainly had a hard time with the wind.

Even Bahr and Koktoak, who both are worn by the weather, had to turn away from the wind to rub their faces quite frequently. And I with my nose, so often frozen, where should I turn on the top of a mountain thousands of feet high, where the wind swept all around and wherever an exposed portion of the body was found there it bit like a keen-edged tool? At 4.15 p. m. camp was made in a sheltered spot, with some spruce and alder mixed, between two hills. The ground over which we have traveled to-day has all been burned some years ago; but the moss has grown again and we have plenty of food for the deer. The same wind continues to-night, only stronger. The temperature is —12°, so we might soon get some more snow. Our accomplishment of the day might be measured by 6 or 7 miles. Oh, how dreadfully tiresome this is getting to be!

Wednesday, January 25.—Another day is at an end. Its trials and troubles are over. We had good reason last night to hope for a fair day's travel to-day, but no. After having gone about 3 miles, or to the top of the nearest hill, we found behind it a complete labyrinth of gulches and forest. "Woy! woy!" says Bahr. It means about as much as when we say: "This does not look very well." Fortunately, where we were was plenty of moss, and so the deer were given rest while all three of us went off in different directions to find our way or the best place where to make one. It was probably an hour before we

all returned to the reindeer. Koktoak had come to no conclusion at all in regard to our way, but Bahr's and my own opinion were alike about the exact course, only that Bahr differed a trifle as to the place to cross a creek. His way was chosen, and armed with axes and snow shoes, as usual, Bahr and I walked ahead another 3 miles and cut our way as fast as Koktoak could drive. 12.45 o'clock we had reached the top of another divide, and where to go next remained to be found out.

It looked pretty dark with forest everywhere. Should we persist in going farther south, so as to gain the higher mountains, which we had planned to do before, then would our troubles last probably two or three days more. Could we, instead, go right southwest down hills and valleys again, then an open tundra of several miles in extent was smiling us welcome. But how should we get there? That was the next question. Bahr walked on to find out, while Koktoak let the deer loose to feed and I started a fire and made tea. Soon Bahr returned without having been able to make up his mind as to where we had better go. So after tea Koktoak was set to tend to the reindeer and to take the sleds down a steep hill and to make camp at the bottom of the same, while Bahr and myself went onward with our axes to prepare a trail out through the woods. It was nearly 2 o'clock when we started on our various tasks, and at 5.30 o'clock Bahr and I returned to camp, which then was ready, having gained exit to the open ground and cut our way back. Everything is now ready again for to-morrow. A little more easterly wind to-day and also stronger than it was yesterday. The temperature this morning was -8° , and to-night it is -19° , with some wind still. Although we have good wood and stove, it is impossible to keep the tent warm in this wind. It is all covered with ice on the inside.

Thursday January 26.—This day has been what we have learned to call a successful day. Camp was left at 8 o'clock this morning, and at 9.30 we had reached the open tundra spoken of last night. The snow was not so deep there, but for guidance and also to cut a bush now and then which happened to be in our way I walked ahead with the ax all day. Two creeks had to be crossed, but fortunately the woods were not so thick that the crossing delayed us materially. Bahr and Koktoak drove three deer each to-day. Tea was enjoyed at 12 o'clock, when ready to cross one of the two creeks. Just before sunset Bahr gave his deer to Koktoak to drive also, while he took a walk up the hills to the left, i. e. to the south, to see what he could see. Meanwhile Koktoak and I trudged along, searching for moss as we traveled. At 3.30 o'clock we also found a most excellent growth of the same and then we stopped at once.

Koktoak let the deer loose and prepared camp, while I walked on a little over 2 miles to see what kind of road we had waiting us in the

morning. It looked fair. Bahr had not yet come back on my return, but shortly after he appeared among the bushes close to the camp. He had on his stroll, looking for a way also, shot one rabbit and one spruce hen. The day has been beautiful, clear and bright. Easterly wind the whole day and it was very strong in the morning, but about noon it subsided. The temperature was -12° in the morning and it is now -10° . This bush business is very hard on our snowshoes, and as a consequence Mr. Bahr has been engaged all evening repairing the netting in his and mine. We have traveled about 10 miles to-day. So much nearer home.

Friday, January 27.—The night's rest was much disturbed. I was sick as could be. Bahr was feeling cold, so he began to fire about 2 a. m. and he kept it up until we left at 8 o'clock. I could eat no breakfast except a cup of milk. On it I walked ahead of the teams, tramping trail until 2 o'clock p. m. At that hour we made tea. It was late, because we had not found any moss until then. After lunch our struggles of climbing the mountains began anew. Two and a half hours later we camped at the upper edge of the timber line on the mountains right to the east of what we think is the Round About Mountain. Bahr and I went up on the highest peaks to study the surrounding country, but darkness overtook us, so we are not certain yet how far on our way toward the Yukon we have been able to advance. Bahr is cooking this evening also. I am sitting in the sleeping bag writing these lines, and because of not feeling well I will retire at once. A moderately strong east wind is blowing and it is 30° above zero.

Saturday, January 28.—We were ready as early as usual, and off we started to continue only as far as Bahr and I had been last night in half dark. In broad daylight it did not take us long to see that this road was impossible to travel. While Koktoak was to cook tea, Bahr and myself walked for a mountain which appeared to be 3 or 4 miles away to have, if possible, an opportunity to see where our way might be. It was a real hard two-hours' walk to reach the desired place, and then nothing certain could be learned from what we saw. And so to make some use of the clear day I started for where Koktoak and the deer were, which I reached at 1 o'clock. Bahr continued onward to another still higher mountain to the southeast, there to study the hills and valleys, as we thought, better. As quickly as tea could be drank Koktoak was dispatched in the southwest, our true direction, to there study the hills. I waited for Bahr and had tea for him upon his return at 4 o'clock. It was then soon decided that we had better go the same way as Koktoak had gone, and that we should go about a mile to make camp in a little patch of spruce. So we did, and shortly after camp was ready Koktoak returned, and from his observations he confirmed what Mr. Bahr had already stated from his view on the last

mountain top he ascended. Consequently, it is now decided to go on along another divide to-morrow. The day has been perfectly beautiful. A south wind has been blowing all day, and the thermometer has registered 36°. This evening it looks as if a big storm is being prepared.

Sunday, January 29.—Camp was left at 9 o'clock this morning and again it was made at 4 p. m., about 6 miles to the southwest from our last night's camp. We are located on the top of a pretty high mountain, just at the timber line. Moss is growing in abundance everywhere. Bahr has broken trail all day, and with ax made way wherever necessary in crossing the lower places on the divide. South wind; cloudy all day, and it has been snowing the greater portion of the same. The deer are tired and so are we ourselves. We can now drive at a certain speed only, and if an attempt be made to go faster than that it is considered as a great insult and our deer then simply refuse to obey orders.

Monday, January 30.—Bahr has been out all day looking for the way. He reports rather unfavorably this evening. I was quite sick last night again, and also during the day, so I have spent the whole day in my sleeping bag, without being able to eat anything. It is very mild weather.

Tuesday, January 31.—This has been a more successful day than what any one of us had anticipated. Already at 7 o'clock this morning were we ascending the steeps. It has been a continuous up and down all day long until 4 o'clock p. m., when camp was again made. We could have gone a little farther, but we found a very convenient tent place in a patch of timber, through which we had to cut our way, and so we reasoned this way: that it is better for us to stay here and rest and meanwhile make the trail. I have been very weak to-day, and it has been unusually hard for me to walk along on the snowshoes; still that is the only way to travel here.

It has been very cloudy and thick in the atmosphere, and the snow has fallen continuously and drifted for an easterly wind, which has been quite strong along the mountain ridges. It is still snowing this evening.

Wednesday, February 1.—Eight o'clock this morning were we on a move, and kept on until 4 p. m., except that an hour's luncheon was taken on top of a mountain where we had a fair view over toward where the Koyukuk joins the Yukon. Our way has been better to-day than what it has been at any day previous since we left Bettles. The snow is not so deep here, nor are the forests as thick as they have been during our last ten days' travel. The hills even have been more rounded and better to travel on than what has ever before been our lot upon this trail. A strong easterly wind has been blowing all day, but it has not been cold. On top of the hills the snow drifted fiercely,

but it was only a foot or a foot and a half from the ground, so it did not bother us any. It has been perfectly clear and beautiful throughout the day, and so it continues this evening.

We have this day seen a large number of caribou trails, but we have seen none of the animals.

Thursday, February 2.—We left camp at 7 a. m. and have traveled comparatively well. We have cut our way for probably 3 or 4 out of the 12 miles traveled.

This evening at the hour of 4, as we had decided on a camping place, Mr. Bahr walked about a little to the brow of the hill on which we are camped and looked down into the valley below. Suddenly he called out to me that he saw smoke down by the river. Surely it was smoke; it could be nothing else. It seemed as if it were probably 3 or $3\frac{1}{2}$ miles away. Bahr suggested that he and I should at once go there to find out who were living there. Sanctioned, and a few minutes later we tramped away. The road was really longer than what we thought it was by looking from the hill. At last, however, after one and a half hours' heavy walking over niggerheads of extraordinarily large size, we did arrive at two well-built log cabins.

These were inhabited by six men—prospectors by vocation and survivors of the Midas' Stampede of last summer. Our conversation drifted from trails and moss to politics and war, but the chief theme was really the "Midas' Fake." Bahr and I received a very cordial reception and partook of a good substantial supper. At 9 o'clock p. m. we started on our return to camp. Koktoak was then ready to go to sacks without supper. He, not accustomed to the art of cooking, had not ventured to prepare anything with which to satisfy his hunger. So at once we had to prepare supper, and it was enjoyed not by Koktoak alone, but also by Bahr and myself. Our walk had proven sufficiently long and toilsome to shake down the one meal and prepare us for another. The day has been beautiful, clear, and bright. Wind easterly and moderate in force. Morning temperature, $+10^{\circ}$, and now it is -6° .

We retire at the late hour of 11.

Friday, February 3.—Because of our late retirement last night we were not ready to leave camp until 8.30 this morning. Our trail then being good, our last night's walk, good time was made in reaching the six miners' habitation, which was exactly in our way. Comparatively little cutting was necessary to reach the river, and the same was true in getting off the same to the west side. At the miners' cabins we stopped long enough to have one of our axes filed, so as to enable me more easily to make a trail when necessary. Again at 11 o'clock we departed from these gentlemen's quarters in the woods with new hopes of getting home at last. At 12 o'clock we had our tea and at 3.30, near the top of a little hill where in the midst of burned ground we

found an oasis with plenty of moss. On the top of this hill we could, as we think, see the last hills toward the Koyukuk, which are known as the Yukon hills. The day has been most beautiful. The temperature the most agreeable one can wish for traveling, viz, -12° in the morning and during the day. This evening it is a little warmer.

Our snowshoes are faring very badly among the small brush we constantly have to tramp, and especially so when the same has been burned. The branches then become so hard and sharp that they tear and cut the lacing all to pieces. Bahr and Koktoak are now busily engaged in the repair of said essential articles. One fear really possesses us, and that is that our snowshoes shall give way entirely before we are able to reach Nulato. We started from Bettles with four pairs of new shoes for three men and they are now pretty badly worn—all of them. It is impossible to walk a mile without snowshoes, and yet I suppose we have probably 60 or more miles out of this labyrinth of little hills and tall timber, with plenty of bushes between.

Saturday, February 4.—Another most beautiful day. It has been as bright as day can be, but a cutting northeasterly wind has been blowing the whole day. At 7 a. m. the teams left camp. I had gone half an hour ahead with a 3-pound ax to prepare the way. Here has been more or less cutting to be done all day, but it has not been very bad. The niggerheads are exceptionally bad, but the snow is not over $1\frac{1}{2}$ feet deep on the level. It is a rolling country over which we have traveled to-day, and it is so as far as can be seen. One thing which is especially bad is that it has burned at least three different times, so no moss is found anywhere but in very small patches, where the snow might have happened to lay at the time of the fire. Fortunately, we happened to find one such good spot at 3.30 o'clock, and there we made camp at once. We have this day easily made 12 miles. Our snowshoes begin to be a source of genuine worry at this time. They wear out entirely, and we have very little material with which to repair them. One of our deer is also getting to be lame on the left front leg, and it is gradually getting worse, so we fear almost that it will not be able to reach Nulato.

Sunday, February 5.—A day of rest has again been made a day of toil. Since the Father has given us one of the grandest days we have had on the trip, and we being in need to get out of this burned and bushy country, we think it all right to thus use even the Sunday. This morning the deer had strolled unusually far away from camp; for some time we have not had a single deer tied. When coming to camp we simply remove the harness and let them go in search of their food. They are now pretty much like dogs. One can walk right up to them and pet them and talk to them, etc. That they understand what is spoken we take for granted because they listen very attentively—so we could not get ready until 7.30 a. m. At 3 o'clock we made camp

near the very southwest end of the Yukon Hills. It is now our pleasure to be able, from an adjacent hill, to see both the Yukon and the Koyukuk river; but between them and us is a thick and burned forest of probably 20 miles—as it looks. Bahr is now putting in a new ax handle again, so as to be ready to go with me preparing the trail to-morrow.

This has been a real hard day because of the dense woods. I am very tired this evening from the constant walking on snowshoes every day and swinging the ax overhead for almost every step. Bahr prepares the supper in my stead this evening. The temperature has been -21° and is now a trifle higher, with a light northeasterly wind, which has blown all day. Good moss for the night.

Monday, February 6.—A very hard day's work is now done at 8.15 p. m. Bahr and I have swung the axes from 7.15 this morning until 3.45 this evening; at the same time we have plod through about 2 feet deep and very loose snow. As soon as the teams stopped this evening Bahr and I had to go 3 or 4 miles farther to try to find our way for another day through the thickets. Darkness came over us long before our return, because it was a little snowy; and seeing that our way for to-morrow was another one than that one on which we had left camp, we decided to go back on the right way and there tramp a trail this evening which can serve us some in the morning. That we did, but it happened no better than that we really got lost in the woods and walked far beyond our camp.

When we at 6.30 o'clock reached our temporary home we were really exhausted. Then supper had to be prepared. Now it is all over and the sacks will soon be fully enjoyed. The moss is good this evening also; here is nothing to pick, but plenty for the deer to feed on. A faint hope of reaching the Yukon to-morrow is now indulged. It will be fun to see how we will come out with such a wild expectation.

We found an old Indian trail this morning; we followed it for a while, but soon we lost it again, and have as usual to make our own trail. It has been cloudy the whole day, and it has snowed some in the afternoon and evening.

Thursday, February 7.—Truly this has been a day of joy and success. At 7 o'clock this morning we left our last night's camp, and after an hour's travel we struck the Indian trail again, and have been able to follow it since. That trail, however, was too narrow and too crooked for our purpose, so I had to walk ahead and cut, just the same, the whole day long. As we come nearer the Yukon the forest becomes heavier and thicker, consequently the work to get through is increased. But the hope of soon being able to reach home invigorated to such an extent that the ax flew unusually fast and heavily, until at 4.30 p. m. we really stood on the ice of one of the many Yukon sloughs.

Twice have we stopped to-day for picking moss. The first time was at 9.30 a. m., when we found a small patch of pretty good moss. There we picked three sacks full while the deer had their lunch, and when ready with the moss picking it was our tea time. At 12 o'clock we began our onward march again. Two o'clock we found another most excellent moss place, and of course we could not pass by such a good thing without utilizing it. So we stopped again, and while the deer ate we picked my big overshirt full of moss. It holds as much as four ordinary sized sacks, and the whole performance took no more than half an hour. We traveled until 6 o'clock p. m., and then we were forced to make camp and to do it quickly also. It is only a small slough we have gotten to, and not the large river. This slough is overflowing badly in some places. One overflow we passed successfully, but on the second we got stuck. I was walking ahead and broke down to my knees several times, and as no place afforded a safe passage we had to retrace our steps for about one-fourth mile before a landing could be made and where we could erect our camp. The banks of this slough are 12 to 15 feet high and perpendicular, so one can stay nowhere except on the ice, and that is very unsafe; but here happened to be a break in the bank at one place, and it was there we managed to lift up the sleds and had to partly lift the deer also to get up.

At present we are warm and comfortable. Bahr and I have had a shave and a wash because of having gotten out of the burned woods.

Now the question is: How are we to be able to reach the trail on the main river? We do not know. It might be that the ice will freeze solid enough during the night for our passage in the morning, otherwise we have surely to find or to make another way. Here we can not stay long because of food for the deer. The day has been perfectly calm, bright, and beautiful, with a temperature of -13° .

Wednesday, February 8.—Ole Bahr and Koktoak went off in different directions at the hour of 7 to find a way. Both of them returned, Koktoak at 9 a. m. and Bahr at 11 a. m., but neither one of them had found a way. Mr. Bahr thought of a certain one, and advised our going there if no better way was proposed by anyone else. But as he was not sure of the outcome of the proposed trail, it seemed rather dangerous to start off on the same. And therefore I suggested that as soon as we had had our breakfast, Bahr investigate his way more thoroughly, and I would go in an entirely opposite direction. I would then go back from where we came and see if possibly I could find the old Indian trail again, which we had followed to the slough, but there lost.

At once this suggestion was agreed to, and off we started at 12 o'clock M. During the morning hours while my two companions were

away looking for trail I was looking for moss, and to our great comfort and joy found such close by our camp. And now while Bahr and I went out to continue the search of a trail Koktoak had as his task to see that the deer had plenty to eat and also to pick more for us to bring along instead of what was eaten during the night.

I walked at least 8 or 9 miles, still I did not reach the Yukon. The slough was fearfully cracked, but being once on it, it was impossible to think of traveling anywhere else for about 6 miles' distance. Finally I gained open country for over a mile, but then there was timber again. By climbing trees I could plainly see the Yukon to the southeast; but several miles away.

The way out there was plain and easy, but it would take us too far out of our course, and so did not like to consider that road at all. To the other side of the slough or directly west of where I was walking was a distinct elevation extending from north to south, and the same was covered with spruce, but from tall trees I could see that there were many open places also through which it would not be hard to make a trail. And a trail there would not take us so far off from our course. At 3 o'clock I had finished my observations and had then clear to my mind that we should go due south from our camp unless Bahr comes back and reports more favorably about his way. When, on my homeward walk, I arrived at the place where our trail came down to the slough, it occurred to my mind that perhaps the Indian trail, which we had followed for a whole day, went just in the direction where I intended now to make our way. And so when walking along it was my pleasure to discover a newly broken branch off from a willow on the bank. This fact led to the discovery of the same trail again: it was very poor, but still it was something to follow.

I followed it for about one and one-half miles in the dim moonlight of a cloudy evening, or until perfectly satisfied that, if followed out, it would be our best trail. When thus satisfied I started for camp and at the same time looked for a new way to reach the Indian trail, without having to return to the beginning of it on the slough. That would, at this time, be impossible to do, even if we wanted to; because the overflow we passed last night has now become so bad that it would be impossible to get over there again. Thus our way was now barred by water the one way as well as the other. Our only recourse was now the hills. The new trail proved to be a good one, and in thirty minutes I reached our camp. It was then a little after 6 o'clock. The moonlight was all gone, because of dark threatening clouds which covered the heavens, and the wind was whistling through the tree tops. Bahr had not yet returned. To aid him, as we thought, Koktoak and I started a big fire under a tall spruce, with the intent to put it on fire. In a few minutes our efforts were crowned with success.

Oh, it was a grand sight in the dark and stormy evening. Supper was prepared, and Bahr waited for in vain. Three more equally tall trees were put on fire until 9:30 o'clock, when we, at last, had to partake of our evening meal without our otherwise so pleasant companion, Bahr. Where is he? We do not know, and at 11 o'clock we retire; still he has not come. The day has been very dark and cloudy; the wind howling, and the temperature is $+15^{\circ}$ this evening. It also started to snow the last hour.

Thursday, February 9.—At 7:30 o'clock this morning Bahr saluted us with a very pleasant "halloo." Breakfast was ready and all of us partook of it, and meanwhile Bahr told his nightly experience. He walked away from camp until sunset, and then he started back; but, overtaken by an unusual degree of darkness, because of the storm, he dared not follow the same trail which he had intended us to travel—over partly open country—but took to the slough. It being so fearfully crooked he had walked the whole night and reached camp at the above hour. Most of the night had been very snowy, and the wind and snow continued until 2 o'clock this afternoon.

Bahr, upon hearing of my trail, wanted to travel at once in spite of the unfavorable weather, if only I could pilot, and so at 10.30 o'clock we started in a blinding snowstorm and traveled until 3 p. m. Because of the storm it has been exceedingly difficult to follow a trail of this sort, when probably not a sign of it was visible for one-fourth of a mile at places. Still we have been successful in accomplishing our task, and at the hour of three we came to a place where considerable difficulty seems to await us in finding our way, and, here being moss also, we decided to stop while we make sure of our trail. Bahr and I made camp, cut the wood, picked three sacks of moss, cared for the deer, and cooked supper while Koktoak was dispatched in search of the trail. He returned at 6 p. m., having found and followed it for a distance of $1\frac{1}{2}$ miles, then it was lost, and he was unable to find it again. To-morrow Bahr and I will try our luck in finding it. All these precautions are taken so as not to unnecessarily lengthen the time we have to travel over mossless country, because then every hour counts.

It has now stopped snowing, but the wind still continues just as forcibly from the southeast. The temperature is 25° above zero this evening.

Friday, February 10.—At 9 o'clock p. m. the struggles of the day are now belonging to the recollections of the past. Early in the morning Bahr and I started off searching for our way, and returned to camp at 7.30 o'clock this evening. Supper had then first to be cooked before our hunger could be stilled. All the day long we have walked under the most disagreeable conditions. It rained quite heavily all forenoon, and about noon it started to snow and blow fearfully. Still we strug-

gled on and on. The snow clogged on our snowshoes and made them as heavy as centner weights. Worst of all was that no strings would hold such weights, but broke repeatedly. We had anticipated trouble of that kind when leaving camp, and consequently we were prepared for it, still no preparations were equal to such extreme wants. This evening there is hardly anything but knots left of the lacings. All our efforts and hard work of the day have proved only a partial success: we are sure of the way for 5 or 6 miles, but that is all. And if there be no moss any nearer Yukon, then we dare not leave here until we know our way out to the very river.

I am so tired this evening that I fell asleep twice while trying to write these lines. Our clothes were wet from both rain and perspiration, and then on the way home they froze stiff.

Saturday, February 11.—It is now 1 o'clock, Sunday morning. Bahr and Koktoak have been out since 8 o'clock a. m. and returned at midnight, having succeeded in finding our way out to the Yukon.

Fortunately we have had a clear day, so it was possible to see a little as to where it would be worth while to make an attempt to go out. To-morrow the axes have to come into use again, making way a few miles more. I have been home trying to repair my snowshoes and cut wood and tend to the reindeer, etc. This evening it began to snow again. Likely we will have plenty of it now, because it is mild weather and very thick.

In chopping wood this afternoon a big stick flew up and struck the bridge of my nose so fiercely that three open wounds were made, corresponding to so many small knots, and the blood flowed in streams. The probabilities are that I will have to return home with a pair of black eyes.

Sunday, February 12.—During the night 6 inches of loose snow had fallen, almost filling up our previously made trail. Due to our late retirement of last night we could not begin to stir about until 7 o'clock this morning, and then the snowshoes needed a little more attention, so when we finally got ready to travel it had become 10.30 o'clock. The sleighing was fearfully heavy on the deep snow. Although we had walked the trail before and I again walking ahead this morning, the deer sank down to their abdomen. Naturally, our progress was slow under such conditions; so instead of making our first camp on the Yukon to-night we made it at 4 p. m., some 3 or 4 miles off from its banks, right under the very last hill, in the direction we travel, toward that mighty stream. We would not have stopped short of Yukon to-day had we not found a patch of good moss on which to feed our deer without having to use our picked supply already this evening.

Only a few more miles of trail cutting and breaking! Oh, what shall we then do to keep from mischief? Simply walking seems now play, and no work at all. It was clear in the forenoon, but shortly

after 12 o'clock there came a dense fog and spoiled the view of the Yukon Valley which we otherwise would have had from the elevated ridge upon which we traveled.

At first this morning we traveled over sloughs and ponds and grass fields, as well as through brush and timbered land on a low level. Our way could have been made a trifle shorter, but we wanted to have the benefit of the trail we had previously made on the lowland. Later we found it to our advantage to take to the hills again and to keep them as far as we possibly could. Now, however, they are all behind us and we have to cross a tundra partly covered with forest to reach the Yukon.

By this time our provision is running pretty low and it is high time for us to get out to some place where our supplies can be replenished. The temperature was $+12^{\circ}$ and $+28^{\circ}$ in the morning and evening, respectively. It looks as if we soon should be favored with some more snow.

Monday, February 13.—At 7.30 this morning did we leave camp. We had the most disagreeable weather for traveling. It had been snowing quite a little during the night and it continued all through the forenoon. Large, heavy flakes fell so thickly that one could see but a short distance around, and as the temperature was nearly $+30^{\circ}$ the snow was just sticking to the sleds and pulkhas fearfully, not to speak of the snowshoes. Several harnesses broke on account of the heavy sleighing. Koktoak and I prepared the trail out to the river, where we arrived at 11.30 o'clock. Bahr, who had the teams, came out half an hour later. By the time of his arrival we had the fire going for making tea and to dry ourselves a little, if possible, because we were all wet, as if it had rained heavily. The drying, however, did not amount to much, but the tea was delicious.

The afternoon has proven to be more successful. The snow is not so deep on the broad river as it is in the woods; and what is better still, we soon came on to the Tanana trail, which seems to be well used this winter. True that the last days of snowing has filled up the trail, but still it is ever so much better than that to which we are accustomed. Shortly before evening we saw a tent occupied by some Indians on the river bank. Our inquiries in regard to the distances to Koyukuk Station and to Nulato were answered very unsatisfactorily. They said, e. g., that we had 50 miles to Nulato. I am inclined to think and sincerely hope that it is wrong. We will find out, I suppose, before getting there. Six o'clock this evening we made camp to thaw out and to dry our wet and frozen clothes, as well as to prepare something wherewith to nourish our worn-out bodies. To-morrow we hope to be able to communicate with our loved ones at home.

Tuesday, February 14.—The same trials as usual, but without much satisfaction. Shortly after 7 o'clock a. m. we were on the trail, plow-

ing on through the deep snow. It is getting deeper for every mile we advance. The last snowstorms the previous few days have here entirely obliterated every sign of the trail. We simply had to feel for it as we went along. Bahr has been our feeler to-day. Our hopes of reaching Koyukuk Station to-day are just crushed. How far off we are no one of us knows. We have not been able to see anything but snow the whole day. Just at sunset it began to clear up, but soon a dense fog enveloped everything. Feeling our way, we traveled on until 7 o'clock and have made probably 15 miles. Because of the mild weather we have been wet through from feet to waists to-day again. Then toward evening the clothing froze stiff, so that there was danger of breaking opposite every joint. Even our sleeping bags are getting soaked. Oh, such misery!

Wednesday, February 15.—Sometimes a person gets so accustomed to adversity that when things do go right it seems a wonder and a source of surprise. So it is with us to-day. Camp was left at the hour of 7. At 9 a. m. we met an Indian hunting party of 20 persons, 13 sleds, and dogs innumerable. All of them were on their way to the Yukon Hills. Naturally they left behind them both a big and a solid trail as long as it lasted. Unfortunately they had come only about 4 miles, or from Koyukuk Station, and consequently upon our arrival there the trail had also an end. After having had a couple of hours' rest and lunch at the station and the purchase of necessary supplies from Mr. Evans we again marched onward toward Nulato. We now knew the distance to be 18 miles, and moss only at one place in that distance—where we were to learn from natives at Koyukukastin. Said village was reached after dark, but not a soul was there who understood what I wanted to know. Upon my inquiries after reindeer moss they in the greatest bewilderment repeated: "Reindeer bals; Reindeer bals; him stop mountains," and then by signs trying to explain far, far away. We had been looking and feeling for moss at every probable place, but it was all in vain.

At 8.30 o'clock we arrived at another Indian habitation. I inquired there also for moss, but the reply was definite: "No moss until you reach Nulato." Knowing this, of course it would only be a waste of time to look for it any more. We therefore stopped at once for lunch and fed the deer with the scant supply we had yet left on our sleds. To my surprise, I found here a native by name Julius who was my traveling companion from Nome to Unalaklik in the summer of 1903 aboard the schooner *Beatrice*. His house was warm and clean and comfortable, so there we prepared and partook of our supper with great relish. I had a wash and a shave after supper, and at 10 o'clock p. m. we are about ready to fix up for travel again, the remaining 6 miles down to Nulato. As the trail took us about 7 miles off from the Koyukuk telegraph station, no chance was given us to communicate

with our dear ones at home to-day either, but at an early hour to-morrow do we hope to be within reach at last.

The day has been fair, cloudy, but not snowy. A moderate north-easterly wind has been blowing the whole day and evening. The snow is very deep, so outside the trail one can not take one step. Should the deer happen to get off the trail, they sink so that it is hardly possible to get them up again.

Thursday, February 16.—Tramp, tramp, tramp all night until 4 o'clock this morning, when we finally reached Nulato. I, being 40 minutes ahead of Bahr and Koktoak, waited on the ice until they arrived, and then we went on right to the herders' camp, about 2 miles down the river. Eight o'clock, having then breakfasted by the herd, Bahr and I returned to the village. We telegraphed home, visited the mission, and had dinner there. In the afternoon Brother Bryngola, Bahr, and I went to inspect the herd and to lasso five fresh deer by which to finish our return trip. It was accomplished, and Bryngola and I returned to the mission at 6.30 p. m. Bahr and Koktoak stay by the herders. We have had telegrams from home that all are well and bidding us welcome.

The day has been clear and nice, but warm as usual. Last night was very dark and cloudy. This evening is bright and pleasant and a little colder. Koktoak and the only herding boy at the station have been picking a little moss to-day for lunch between Nulato and Kaltag, a distance of 40 miles. This is, I hope, the last moss picking we have to do on this trip.

Friday, February 17.—At 9 o'clock a. m. we started from Nulato with five deer from that herd and one of the old ones—six in all. Not a quarter of a mile had we traveled before it was fully demonstrated that the deer we had gotten in exchange were hardly any better than those we left and which had gone the enormous distance from Unalaklik to Bettles and return to Nulato. First at 4.30 in the evening did we reach halfway roadhouse, i. e., halfway between Nulato and Kaltag. There we came in after a very heavy walk in snow several feet deep. A heavy northeasterly wind had been blowing all day, so we were really tired, all of us. We bought our supper here, so as to have a little rest ourselves and then go on again during the night.

Saturday, February 18.—We traveled all night until probably 3 o'clock in the morning, then we stopped for a couple of hours. During that time Bahr and Koktoak made coffee and took something to eat while I took a little refreshing nap in my bag right on the open sled, gladly sacrificing the coffee for 2 hours' sleep. A new start was then made, and after many long, dragged hours we reached Kaltag about 10 o'clock a. m., 25 hours from Nulato. The deer are played out already. The trail is in a terrible condition. The wind has been

howling all night long and increased in strength every moment until by the time we reached Kaltag a regular old-fashioned blizzard was stirred up. The snow so fills the air that we can hardly see the trees and bushes close by.

Having found moss some miles up the portage from Kaltag we made camp there. As camp was ready two soldiers, who had been out trying to repair the telegraph line, but failed, came along and they stayed with us for luncheon, and then they will go on with us again to renew their efforts while we simply march on during the night to reach the Old Woman Station, if possible, to-morrow. While ready to start off, the weather was really fierce and it looked as if the night would be very dark, so it was thought safest to stay where we were over night. The two military men stay with us.

Sunday, February 19.—The storm had subsided during the night, and the morning promised a fair day. Both the telegraph men and we started off at quite an early hour. The trail was very bad, but not as bad as on the Yukon. I walked ahead breaking trail all day and came to the mail cabin, 21 miles from Kaltag, at 4 p. m. The teams, however, did not arrive until 7 o'clock. Shortly after my arrival at the cabin two other soldiers from the Old Woman Station arrived there also. They were out on the same errand as the two from Kaltag. The latter two came in here this very moment, 9 o'clock p. m.

As soon as I came to the cabin fire was started and snow melted for water. That was as far as I could go in my cooking, because I had nothing with me before the teams came. But then when the Old Woman men came in they had food, and supper was soon enjoyed. It is now midnight. Bahr and Koktoak have had their supper also. Koktoak takes now all the teams to proceed home as fast as he can, while Bahr and I take just one deer each and no load other than sleeping bags and clothing and go ahead. The snow has blown off the trail here and it is light going.

Monday, February 20.—Traveled since midnight. We met United States mail carrier Doyle at 7 o'clock this morning. He brought me a very precious letter from my dear wife. At 10 a. m. Bahr and I arrived at the Old Woman Telegraph Station. There we stopped until 3 o'clock in the afternoon, eating, resting, and feeding the reindeer, and then we proceeded toward home. The trail was excellent and at 7 o'clock in the evening we arrived at Semska's place, only 18 miles from Unalaklik. We stayed there while preparing and eating our supper and at 10 p. m. we again harnessed up, not to unhitch before we had safely reached our more than ever appreciated home at 2 o'clock in the morning of February 21. The deer were stabled and fed before waking anybody. Oh, what a pleasant meeting with our loved ones after nearly three and one-half months' separation, under conditions like those in northern Alaska.

Temperature record and approximate number of miles traveled each day from Unalaklik to Bettles.

Date.	Temperature.		Number of miles traveled.	Date.	Temperature.		Number of miles traveled.
	Morning.	Evening.			Morning.	Evening.	
1904.							
Nov. 10.....	(?)	(?)	20	Jan. 6.....	0	+20	25
Nov. 11.....	0	0	8	Jan. 7.....	0	+30	12
Nov. 12.....	0	-10	10	Jan. 8.....	+10	+20	20
Nov. 13.....	-12	-25	15	Jan. 9.....	+20	+18	22
Nov. 14.....	-25	-26	15	Jan. 10.....	+20	+15	
Nov. 15.....	-18	-14	10	Jan. 11.....	+30	+21	(d)
Nov. 16.....	-10	-10	16	Jan. 12.....	0	+18	(d)
Nov. 17.....	-20	-18	14	Jan. 13.....	+28	+12	7
Nov. 18.....	-12	-12	12	Jan. 14.....	-6	0	9
Nov. 19.....	-12	0	7	Jan. 15.....	-6	-2	10
Nov. 20.....	+20	+20	(a)	Jan. 16.....	-20	-35	12
Nov. 21.....	0	0	12	Jan. 17.....	-42	-35	8
Nov. 22.....	-10	-6	10	Jan. 18.....	-2	+12	9
Nov. 23.....	-5	-12	18	Jan. 19.....	-10	-20	3
Nov. 24.....	-14	0	10	Jan. 20.....	-38	-40	14
Nov. 25.....	+15	0	14	Jan. 21.....	-43	-30	10
Nov. 26.....	-6	-8	18	Jan. 22.....	-15	-19	13
Nov. 27.....	0	0	10	Jan. 23.....	-35	-22	(e)
Nov. 28.....	0	0	15	Jan. 24.....	-28	-12	7
Nov. 29.....	-5	-5+	12	Jan. 25.....	-8	-19	6
Nov. 30.....	-2	-5	10	Jan. 26.....	-12	-10	5
Dec. 1.....	+20	+10	8	Jan. 27.....	-15	+10	10
Dec. 2.....	-10	0	15	Jan. 28.....	+18	+18	7
Dec. 3.....	0+	0+	5	Jan. 29.....	+20	+16	2
Dec. 4.....	0	0	(a)	Jan. 30.....	+12	+12	6
Dec. 5.....	+32	+32	15	Jan. 31.....	+10	+20	(a)
Dec. 6.....	+2	0	6	Feb. 1.....	+10	+20	10
Dec. 7.....	-4	-4	12	Feb. 2.....	+10	-6	10
Dec. 8.....	0+	+0+	12	Feb. 3.....	-12	-4	12
Dec. 9.....	+5	+10	8	Feb. 4.....	0	0	10
Dec. 10.....	+10	+10	18	Feb. 5.....	-21	-18	12
Dec. 11.....	+10	+10	11	Feb. 6.....	-13	-9	8
Dec. 12.....	0	-2	13	Feb. 7.....	-15	-12	12
Dec. 13.....	-3	-4	15	Feb. 8.....	+15	+25	(a)
Dec. 14.....	-5	-3	18	Feb. 9.....	+18	+20	4
Dec. 15.....	+5	+2	16	Feb. 10.....	+38	+20	(a)
Dec. 16.....	-5	-25	5	Feb. 11.....	+4	0	(a)
Dec. 17.....	0	0	10	Feb. 12.....	+20	+28	9
Dec. 18.....	-2	-20	15	Feb. 13.....	+28	+28	14
Dec. 19.....	-25	-25	14	Feb. 14.....	+17	+12	15
Dec. 20.....	-25	-32	5	Feb. 15.....	+18	+18	20
Dec. 21.....	-23	-20	(b)	Feb. 16.....			
Dec. 22.....	-38	-42	(b)	Feb. 17f.....			
Dec. 23.....	-44	-44	(b)	Feb. 18f.....			
Dec. 24.....	-43	-44+	(b)	Feb. 19f.....			
Dec. 25.....	-44	-44+	(b)	Feb. 20f.....			120
Dec. 26.....	-44+	-44	65				
Dec. 27.....	-26	0	(c)				
Dec. 28.....	+10	+10	(c)				
Dec. 29.....	-5	-10	(c)				
Dec. 30.....	-5	-4	(c)				
Dec. 31.....	-4	-3	60				

^a Rested.^b To mouth of Alatna.^c From mouth of Alatna to Bettles.^d Rested, and snowing.^e Kept Sabbath.^f Thermometer out of order.

ACCOUNT OF TRIP FROM THE KUSKOKWIM VALLEY TO LAKE ILIAMNA. HEDLEY E. REDMYER.

NOONDALTING, March 19, 1905.

DEAR SIR: After having arranged everything in good shape for traveling, I did not overlook anything that would hinder us from traveling. We left the Bethel Reindeer camp December 15, 1904. Our party was composed of Mr. Wouri, Mr. Lampela, Mr. Karbum, Pete Hatta, Eskimo apprentice boy Henry, and myself. Mr. Spein, Finn herder at Bethel, was to go two days with us to help the Finns or show

them how to drive the provision-train deer, and Tommy, an Eskimo apprentice from Bethel, was to go as a guide over the first range of mountains or the Oakland Mountains.

At that time there was hardly any snow at Lapps' camp; soft weather and rain previous to that time had thawed the snow. We started in an easterly direction across the mountains, following gulches and narrow cuts. I estimated the traveling distance the first day to be about 8 miles. The next day we got into deep snow and underbrush, which increased rapidly the farther we came. The 17th, Mr. Spein went back and the Finns had to take care of their own deer and sleds. We kept on zigzagging through those mountains. There were four different passes, the last one being the summit, which was 1,700 feet above sea level or 1,100 feet higher than Anyak River on the other side.

The 23d of December we got down to Anyak River. I calculated the distance to be 67 miles from the Lapps' camp. Tommy went home the same day. There was a good camping place, and a good place and pasture for the herd. I decided to stop a few days to rest the herd and men over Christmas. It had been very cold a few days; the thermometer showed on Christmas morning 50° below. The Finns, not being used to camping out in a tent in such cold weather, thought it was too much to be out traveling. We stayed there until the 30th of December, when we made a start again. The snow was very deep in the valley, almost too deep for the deer to travel. We had quite a few mountains yet to wind around before we got clear of this range of mountains.

On the 31st we were overtaken by a genuine blizzard from the northwest. We had just cleared the highest mountain on the south side, and were glad to seek shelter in a little gulch where there were plenty of willows for fuel, also plenty of moss for the deer. We stayed there until January 2, when we started again. We had been going in about an easterly direction and now I wanted to change my course about northeast, but was prevented from that on account of the same range of mountains continued on the north, rising high of the horizon like Sugar Loaf. I can not really give you the details of every day's doings and happenings, as it will take too much space.

I will send you a copy of my log book as soon as I can obtain some paper. We had to continue our course east, and sometimes to the southeast, to avoid these high mountain spurs, only following the lowest ridges or foothills. To the south of these mountains was a wide-open space with nice rolling hills. We kept on in a southeasterly direction, thinking we might strike the Alaska range at an early time and then strike due north in order to get on our route marked by the Government and cross this range as indicated on the map, but the prevailing gales and snowstorm delayed us. The moss was burnt here, so we had to make a halt and make an investigation. We set

out on skees in a northerly direction about 35 miles, and even from there as far as we could see with spyglass it was burnt dead timber and black mountain sides.

We then set out in a southeasterly direction about the same distance and came across a good moss field burning, which showed that all along the near part of the small river which runs north and south a strip of about 35 or 40 miles wide was burnt on both sides. How far north it stretched was hard to tell. Seeing that we were detained right along either by stormy weather or condition of the country, it being about the last days of January and only two months more that we could travel, when the fawning season for the deer would commence, we would have to stop wherever we would happen to be. To get stuck up in those high mountains of the Alaska range, with only provision enough to the 1st of June, and perhaps the condition of the country on the other side toward Cook Inlet such that we could not obtain enough provision for the summer before the snow left the ground did not seem very favorable. I have practically been following the course en route that Mr. Kilbuck, the Moravian missionary, had written to you about.

Then I took up Mr. Kjellman's letter, which looked to me very favorable and which route would undoubtedly have proven to be the best of all, if there had not been any other obstacle at the end of it. Looking at Mr. Mendenhall's letter, he has undoubtedly some knowledge of the country. Mr. Spurrs and party drifting downstream on the Kuskokwim in a canoe could not know much more than he saw on the river banks and surroundings. The inside country was not visible for any of them. As a rule, people who have had no experience with reindeer only by reading are always led to believe the reindeer capable of more than they really are. They are in fact far ahead of any animal to go through a wilderness, but there is a limit to all. I knew if I could get on Clark Lake I could make better time and save a good many more miles traveling and perhaps make Shushitna River or Knik River before April 1, or at least get over the Alaska range before that time and not run any risk of being stationed at a place where I could not get provisions readily.

The 19th of February we struck a big lake which I thought to be the Clark. We made good time on the lake, as I had calculated. The 22d of February we came to an entrance to a big river and found a native who could tell us that we were on the Iliamna Lake, but that we were at the entrance of Naschling River, which runs from Clark Lake, and that we only had a short distance to Clark, and that there was a good portage from Clark Lake to Tyonik, and that white people had traveled over the same portage in the winter. I felt much encouraged in my disappointment. He also informed me about some white people living not very far. I hunted up these people, who were

prospectors. They said the portage was all right, but there might be lots of snow and they had no knowledge whether there was moss or not.

In order to lighten up our loads I sold some of our provisions as we could perhaps travel much easier with a lighter sled, and the provisions I could replace at Tyonik. We had some difficulty in traveling, but came to Clark Lake March 1 and found the lake surrounded by high mountains, sharp as needle points, and at the foot these mountains were covered with spruce wood and a very limited space to drive the herd into, and the worst of it was there was not much moss for the deer.

The 5th of March we went as far as we could go with the herd, and we were about 8 miles from the Portage River. There happened to be a pretty good moss place right in the timber, but surrounded by high mountains. A river, which the natives call the Kontraskewna, flows through this valley or kind of cut in the mountains; but I found that we were in a wolf country and that there was no moss at entrance of the Portage Creek. I told Pete Hatta and Mr. Lampela to go as far as they could in two days on the Portage Creek and make an investigation and return. In the meantime two natives from Iliamna Bay just happened to come across the portage from Seward, and they told me there was no moss on the whole portage, and on the other side was very deep snow, and when the boys came back and they had found no moss I knew then that our traveling was at an end.

As the ice was getting very soft I made a retreat as fast as we possibly could, as I did not want to be entrapped in the mountain with the herd. So I made up my mind to return to Iliamna Lake, which is one of the finest reindeer countries I have seen in Alaska. People who have been living here for years tell me that this last winter was the warmest and softest winter they have seen. That such weather in the midwinter is unusual; as a rule it is cold. So you can readily see that some winters one can travel better than others.

Yours, very respectfully,

HEDLEY E. REDMYER.

Dr. SHELDON JACKSON,

Bureau of Education, Washington, D. C.

NOTES ON REINDEER, SIBERIA AND ALASKA, 1881.

[Senate Ex. Doc. No. 204, 1883-84, first session Forty-eighth Congress. Cruise of steamer *Corwin*, pp. 113, 114, etc.]

From the report of the second cruise of the revenue steamer *Corwin* in 1881, Capt. C. L. Hooper, commanding, it appears that the officers of the vessel were struck by the fact that the natives on the Siberian side of Bering Sea domesticated the reindeer, while those on the Alaska side merely hunted them. The *Corwin* cruised on the Siberian side as far as Cape North in 1881, and at several points between Plover

Bay and Cape North members of the party landed and had dealings with the "deermen." The report contains a photograph of a herd of reindeer and colored lithographs of the reindeer moss, together with a scientific and historical account of the animals themselves, from which the accompanying extracts are taken:

"Little though the reindeer's importance is to civilized communities, there is probably no animal in existence which has contributed so much toward the support of human life. With the reindeer many thousands of human beings are now, and have been for centuries, able to exist, and apparently to enjoy life, in regions which without it would be uninhabitable, for there is no other animal known which could supply its place.

"The reindeer (*Tarandus rangifer*) ranges in its wild state over the entire arctic region of both hemispheres, even to the most desolate of the outlying islands. It is found on Cape Chelagshoi, the most northern point of the continent of Asia, and on the Seven Islands, which are the northernmost islands of the Old World. It inhabits the northern part of Nova Zembla, and has been seen on King Coils Land east of Spitzbergen, and on the north coast of Northeast Land and also upon Caslons, Parrys, Phipps, and other islands lying still farther north. Notwithstanding the high latitude of these places and consequent extreme cold and almost constant snow and ice, the hardy reindeer finds food and thrives."

Barentz says: "Although Spitzbergen lies under and over the eightieth degree of latitude, there are to be found deer and abundant leaves and grasses there. Upon that island alone the annual slaughter of reindeer formerly amounted to fully 3,000. A party of Cossacks who passed six years there are said to have killed 250 deer without the aid of guns, so plentiful were they. Whether the vast numbers yearly killed by hunters exceed the natural increase, and their ranks have been diminished, is not known. It is certain, however, that great herds of them still exist, both in the wild and in the domesticated state. These herds vary in size according to locality. On the islands north of the American continent they are small, seldom exceeding two or three hundred, and usually not even so many, while on the continents they run up into the thousands.

"Among the Koraks and other wandering tribes of Kamchatka the herds often number from a thousand to four thousand and even eight thousand animals. But among the Tehuktchis inhabiting the shores of the Arctic Ocean and Bering Strait the herds exceed five hundred, although herds owned by interior bands of the same tribe are much larger.

"There are at least two varieties of reindeer on the American continent, the caribou, a woodland deer, and the barren-ground deer. The latter are the more numerous, and inhabit the barren, desolate

lands within or near the Arctic Circle, while the former inhabit the wooded regions farther south. These varieties differ in size, the caribou being the larger; they also differ in the shape of the antlers, those of the caribou being more palmated. In color they differ but little, each being dark brown in summer, but much lighter in winter. In the domestic deer of northern Siberia there is not this uniformity of color; they are found in many colors—white, the different shades of brown, and occasionally, though rarely, black; many are beautifully spotted with pure white and a dark shade almost black, the outlines of the colors sharply defined, as though laid on with a brush.

“According to J. D. Caton, who made a study of the reindeer while traveling in northern lands, this is not true of the deer of Norway and Lapland. He says none were spotted as we see our cattle spotted with well-defined margins to the different colors, but the colors were confluent, so that portions would be gray or roan. These animals were undoubtedly, when in their wild state, of the same uniform color as the wild deer now inhabiting those regions, and the change is the result of their domestication. These facts may have a bearing upon the relative lengths of time they may have been subject to the control of man in the two hemispheres. The young of neither wild nor tame reindeer have the peculiar spots of the fawns of the red deer. They change with the seasons, as do the older ones, not only in color but in the texture of the hair, which in summer is short and fine, while in winter it is coarse and thick and very brittle. This brittleness of the hair of the reindeer has been attributed to the amount of starchy matter contained in the food upon which it subsists.”

* * * * *

“The food of the reindeer consists principally of varieties of lichens, *Cladonia rangiferina*, *Cladonia cornucopioides*, *Cladonia incolis*, and *Cladonia gracilis* being the most important.

“It is said that upon the west shores of Davis Strait the deer come down to eat the fuci which are exposed at low tide. Some writers have claimed that the Greenland deer do not subsist upon this moss. It is possible, however, that this is a mistake. There seems no reason why this hardy plant, which flourishes in all other portions of the arctic regions, should be wanting in Greenland, and wherever found the deer will eat it in preference to all other food.

“It is altogether probable that wherever reindeer are found there will be found the *Cladonia*, or some lichen closely allied to it and equally nutritious, and that without it they could not exist, and without the deer the tribes that inhabit the vast desolate plains bordering on the arctic seas would soon become extinct. There is no doubt that the reindeer can and do eat various kinds of leaves and grasses and young sprouts of willow, alder, and dwarf birches. When brought to lower latitudes, they browse like others of their class; yet a certain

amount of lichen food is necessary to them. When confined in zoological gardens, they are fed each day with moss brought from the north for them, and they do not continue healthy without it. Owing to the great length of time required for this food to digest after being eaten, the deer is able to abstain from food for several days together without feeling hunger, and on this account the owners, when traveling with their herds, or in sledges drawn by deer, can make long distances without stopping."

* * * * * *

"The reindeer furnish their owners with food, clothing, and shelter, and all the necessaries of life. The flesh, blood, and entrails are eaten, the skin makes the garments, beds, and tents. The skin of the leg, which is covered with fine short hair, makes the boots. From the antlers are made many of their implements, drill bows for lighting fires, knife handles, etc. The sinews of the deer make the native thread, and a most excellent thread it is.

"The bones, soaked in oil, are burned for fuel, and in addition to all this the deer furnishes his master with the means of transportation, and indeed to a large extent assists in forming the character of the man."

* * * * * *

"But a small portion of the larger herds are used to sledges or as pack animals; only a few of the males are used. These are selected when young and emasculated to make them perfectly docile. In some of the smaller herds it is not unusual to find that nearly all of the males have been subjected to this operation, a few only being kept for breeding purposes. In a herd of about 250 seen by the writer on the Tehuktchi Peninsula, but two males remained entire.

"The harness is a very simple affair, consisting of a stout collar, to which a strap is fastened at the breast. This passes between the fore-legs and under the belly, and is long enough to allow the deer to be several feet from the sledge. They are harnessed single or in pairs. When in pairs, one of the antlers is cut from each animal to prevent their becoming entangled, and a rein is attached to the remaining antler, which, however, appears to be less relied upon than words in the guidance of the animal. The Siberian deer sledge is a rough, clumsy affair, and as it is tied together with thongs it is constantly working loose and falling apart. Very different is it from the broad-backed, graceful, and comfortable-looking sled of the Laplander.

"The trained deer are allowed to graze with the rest of the herd. Their ears are split so that when wanted they are easily recognized, and, as they are very tame and gentle, they are easily caught and harnessed."

* * * * * *

"Singularly enough the natives of northern Alaska do not domesticate the reindeer, although they have abundant opportunities to capture the young. This appears the more remarkable when we consider that they are yearly in communication with the reindeer people of Siberia, and fully realize the superiority of the skin of the domestic animal for garments, often crossing Bering Strait and making long and dangerous journeys along the coast and islands to secure them, and paying for them many times the value of the skin of the wild deer.

"The Innuits also make long journeys in their own land in search of game and for the purpose of trading, using sledges drawn by dogs, which must be fed daily, while with deer they could make longer distances, carry larger loads, and, above all, it would not be necessary to transport food for their animals, as the deer could obtain its own. The milk of the deer is used by the Laplanders, but the amount obtained is small, seldom exceeding one pint at a milking. Caton says the female deer dislikes greatly to be milked, and will never submit except by actual force. It is necessary to tie her while it is being done. It is probably for this reason that the reindeer people of Siberia, with possibly few exceptions, make no use of the milk."

* * * * *

"The task of skinning the deer is always allotted to the women: they also tan the hides and make the clothing. The process of tanning is very simple and effective. It consists in drying the skin in the open air, then removing with a scraper of flint or iron all the particles of flesh and muscular fiber that remain attached, after which the skin is rubbed with the hands until it is perfectly soft and pliable; then willow or alder bark, scraped fine and soaked in water, is rubbed on, care being taken to prevent its coming in contact with the hair. When dry it is ready for use, the flesh side presenting a rich terra-cotta color. The skins taken from the animals killed in summer are preferred for clothing, while those taken in winter are used for tents and sleeping rooms, and also for bedding. These are not tanned, but only dried.

"The Tehuktehis make an undergarment of the skins of the unborn young; it is exceedingly soft and pliable, and very much prized by them. Many of the garments manufactured by the women belonging to the wandering deer tribes of Siberia display a good deal of taste and marvelous patience in their arrangement. A garment in the possession of the writer has a border round the bottom, 8 inches in depth, containing 1,800 pieces of deer skin with an aggregate length of 300 feet, all neatly sewed together with the sinew of the animal, the different colors so arranged as to form the whole into a very neat and original design. This is no unusual case; indeed, these garments are rarely seen without some ornamentation upon them."

REPORT CONCERNING THE ESTABLISHMENT OF THE ILIAMNA REINDEER STATION AND THE DIFFICULTY OF PROCURING SUPPLIES.

ILIAMNA REINDEER STATION, *May 8, 1906.*

SIR: Inclosed please find a report of the necessary expenses incurred in transporting supplies and the maintenance of the reindeer station. In my report in December, 1905, I told you of the difficulty in handling provisions and supplies so late in the season, but at that time I thought we would be able to freight all our stuff with the deer. The 27th of December, 1905, I left Iliamna Village, accompanied by my two apprentices, for the reindeer camp, with the intention of bringing the reindeer herd and outfit across the lake to the new place, or the present reindeer station. The ice on the lake was not formed yet, so we had to walk around the lake, a distance of about eighty miles, wearing snowshoes, and packing on our backs cooking outfit, grub, and sleeping bags. It took us four days to make our reindeer camp. It was miserably cold weather, which made hard tramping, and not very pleasant nights to camp out without tent or shelter. We arrived at the reindeer camp December 31, and found everything all right. The ice had commenced to form on the lower end of the great lake.

On the 12th of January we started to move the herd nearer to the lake. The ice being 16 or 18 inches thick, on the 13th day we crossed the lake on the ice and came to the new place January 15. The carpenters, who also were living in tent, were busy working at the houses. Although such cold weather, no house was yet in such shape that we could live in it, and I preferred to have the herder and the two apprentices stationed right with the herd, although only a half mile from the station. As we happened to see two wolves on the lake, and I knew they would follow us, we pitched our tent right on the deer pasture. On the 17th of January Mr. Hatta, accompanied by Pete S. Gregory, one of the apprentices, and sled deer, went down to Iliamna Village after a load of supplies. It was terribly cold weather, with a raging blizzard, but they managed to make the trip in four days. I had some poison, which I let Mr. Hatta have, to be used to exterminate the wolves; he fixed up some bait and set it in a place where we expected the wolf to come. The wolf came and had a good feast of the bait, which consisted of reindeer tallow saturated with what we thought to be deadly poison. The poison was not of the very best, as it only made him sick, and he thought perhaps that he would have a revenge, as the night afterward two of them came quietly in the herd, which was not 200 yards from our tent, and killed a deer, but they happened to select a sick male deer, which I did not think would have lived anyway. After that we started to watch the herd at night. It had been continually cold weather from the 26th of December to February 1. I had been in hope that the weather would moderate a little, so we could com-

mence transporting our supplies from the steamboat landing to the reindeer station.

On the 1st of February Mr. Karbum wanted to leave and go to Kolmakofsky, where his family had gone. It would leave us in a bad position—only Mr. Hatta and two natives. He needed the two to herd the deer, and I needed a herder to start hauling provision from Iliamna Bay to the reindeer station. Although the two natives could herd the deer, I could not take Mr. Hatta away, as I could not depend on them or trust them in herding when the wolf was around, and to handle sled deer was impossible with the little training they have had. Finally I succeeded in getting Mr. Karbum to stay another month by giving him a small tent and a little provision in addition to his salary. My intention was now to have him to do all the freighting with deer while he was staying, and I believe everything would have gone all right if the change of the weather had not been so severe from bitter cold to a warm rainfall of the worst kind, which melted the snow on the ice and made the ice on the Iliamna Lake as clear and smooth as a mirror and so slippery that a man could not walk without creepers on his feet. It was impossible to use reindeer without being shod. I had no blacksmith tools or any material for making shoes for the deer, which I could easily have done with some of the old deer. The provision was needed at the reindeer camp and also for the carpenter. To hire a dog team when you have lots of good, well-trained reindeer was altogether against my will. Finally I decided to go down to the village, taking Pete S. Gregory with me, and leaving Mr. Karbum at the camp with orders to start at once for the village with deer if the condition of the weather changed the ice in such a shape that the deer could travel.

The apprentice and myself went overland, as I wanted to see if there was a possibility of taking the supplies overland with the deer, but that was found impossible because of high peaky mountains with deep gulches. We made the trip in two days to the village, or came there on the 10th of February. On the 12th I hired Brown Carlson with his dog team to go to Iliamna Bay. The distance is 12 miles (but there is a high summit to climb over); and also hired Savoy Gregory to go with Pete S. Gregory, or to help him in boating provisions from A. C. Point or steamboat landing, where our supplies were left last fall, to Iliamna Bay, where they could be taken either by dog or reindeer team. I started the two natives to boat the goods. The distance is about two miles and half, but the cold spell we had had froze ice in the bay and as far as could be seen out on Cook Inlet. The ice was now broken up in big cakes, and the chance of using the boat was small, but by watching the tide carefully one trip a day could be made. There being not much snow on the portage, a small load only could be taken. Mr. Carlson and I went to the village again

the same day with a load of provisions, when I hired Mike Rietorof to go with his dog team with a load of provisions to the station. We kept on hauling supplies for six days, Mr. Carlson and his dog team, over the portage to the village, and the two natives were boating for four days, when the ice jammed in there so thick that they could not come out or in. I waited a while at the village, hoping that the weather would change the ice so that Mr. Karbum could bring the deer, but the ice continued to be slippery. It was now about the last of the month and Mr. Karbum's time was out. I decided then to hire Mr. Anderson, who had two good dog teams, to make a trip to the station, as Pete S. Gregory wanted to take his wife and family to the reindeer camp—his wife and family had been living in the village. On the 1st day of March we left for the station with two dog teams, having about 1,000 pounds of provisions, the apprentice's wife and children and their little belongings. We made the station the very same day. The next day Mr. Carlson and Mr. Doty, the carpenter, left.

I decided now that I would take two of the oldest deer and go down to Iliamna Bay and try to sled all the supplies to Iliamna village across the portage, and try to get enough sent up to the station so we could get along until navigation opened up on the lake, when the provision and stuff could be brought by sailboat from Iliamna village to the reindeer station. We had a snowstorm on the 8th and 9th of March, so there was about 2 feet of snow, but it did not seem to help much; it was slippery under the snow. I left the station with my 2 deer the 10th of March. On the same day it started to rain again, and the snow disappeared before evening and left the ice as glaring as ever. I had to follow the beach, or go overland where I had a chance to. It took me three days to get to the village. When I came down there, there was quite a little snow on the portage. I started at once to haul what I had in the bay, but nearly all the stuff was stored in a house at A. C. Point. I saw I could not be freighting goods with the boat and driving deer at the same time; besides, I had boxes and stoves, weighing about 500 pounds each, which would be too heavy for one man to handle. I therefore hired Mr. Harry Nelson, a good boatman, and a native, Nikolai Gregory, to assist Mr. Nelson in boating. The ice had nearly all drifted out. Owing to the tide they could not make more than one trip a day.

On the 16th I sent Mr. Anderson with two dog teams loaded with provisions; also bringing apprentice Sakarusky's wife and two children to the reindeer camp, while I was freighting goods with my two deer from Iliamna Bay to the summit of the portage, making two trips a day and having about 400 pounds on the sled to each deer. From the bay to the summit is about $3\frac{1}{2}$ miles, but it is a steady upgrade; then at the summit is a drop down in a ravine or gulch about 250 feet. The goods have to be lowered down by rope and blocks, down in the gulch.

From there it is nearly level to the village on the Iliamna Lake. Although I was working as hard as I could, the snow was disappearing fast, too, on account of the soft weather—it commenced to bare the ground on some places. I therefore hired Mr. Anderson again, with his two dog teams, to help me along until I got everything to the village. After I got everything on the summit I hired Olaf Olsen and a native, Ivan Brown, to lower all the goods from the summit down to the gulch. On the top they had to pull them by hand on a sled to the edge of the drop-off, where they were lowered down on a sled by rope. While they were working at that we were busy hauling the goods down to the village. I had as much as 800 and 950 pounds on the two deer. On March 31 I had all our supplies stored in Mr. Anderson's warehouse at Iliamna village. On April 1 I was ready to start for the station, when a man came from the steamboat landing with the news that the *Dora* had come in on the 31st and that there was some freight for the station. I went over again with my two deer and received the goods at the bay and took them all over the summit, but the snow had disappeared so much that I had to leave on the road a box of lead for a seine. It was now impossible to do any more freighting. I was glad that I had been wise enough to hire help, as all the goods are now in such a place that they can be transported with a sailboat.

On April 6 I took a stove and belongings about 3 miles on the lake, part of the way to the station, as I wanted to see how the ice was, so that I could judge how much goods I could take; and as it had been raining so much lately the ice might be in a better condition than before. I went down with two deer and one sled, or the deer side by side, as the stove and fixtures weighed about 500 pounds. In coming back, near to the village, I had an accident which nearly cost me my life. The natives and some whites had left their dogs loose, thinking that I would not be back so soon. I was driving on the river which leads to the village, when, without any warning, a pack of 15 or 20 dogs attacked my deer. The deer, of course, started on a dead run up the river. In so doing I was thrown off the sled, but did not lose hold of my driving line. I was dragged along the sled. The deer were running to where the river was open and a strong current rushing under the ice, but as luck would have it the deer sheered off to one side, to the bank of the river. The deer turned around, as another pack of dogs had come to head them off, and in so doing I made a quick spring and had the deer by the halters, and was in front of them, but the savage dogs jumped on the deer. The deer, frantic with fear, started again; as I did not have the power to hold them, I fell under the deer and partly under the sled, still hanging on to the driving line. To let go meant death to the deer. After dragging me over the ice some white men, who had seen us, succeeded in stopping the deer.

They finally got me up, as the deer were tramping on my body. I was stunned so much that I could not get up by myself. I was not hurt very much, only shook up and bruised. The deer were lacerated, but not so badly as I had expected.

The next day, the day I had intended to leave for the station but was unable to do so—the 8th day of April—I put 1,800 pounds on the two deer and started for the station. The ice was now in a better shape. The continual rain had softened the surface of the ice and had formed what we call “gray ice.” The deer traveled easily with the load where they could get good footing. The 9th day it was blowing so hard and the ice slippery at places, and with the wind against me it was useless to try. The 10th day I made the portage, about $3\frac{1}{2}$ miles from the station. Before leaving Iliamna village I had bargained with Mr. Peter Anderson to make another trip with three dog teams, bringing supplies to the station, which he did on the 11th day of April. His recompense is that he will have furnished lumber and nails and I am to build him a rowboat. As I wanted the stove I had left on the ice, and 200 pounds more provisions, I hired Tom Rasmussen to bring it up, which he did on the 15th day of April. By my own effort and hired help the herder and apprentice have enough to last them until the 1st of October. The provisions and supplies which I have left in Mr. Anderson’s warehouse will remain until orders from you to take them to the station. In a letter from you you state that this station is next to Gambell in expense. I can not see how you can compare the building of station—a place which is 75 to 80 miles from a steamboat landing or seaport, and an old station where everything is brought into the station’s warehouses with the assistance of revenue cutters and crew, and on an island surrounded by water, where nothing can trouble the deer. A superintendent at such a place undoubtedly has an easy job.

Our increase of fawns this year of this herd should at least be 175, but the death rate will be more this year than last year on account of not having enough competent herders. The deer need watching day and night until the fawns are about 2 months old; and what do these or any other natives know about herding any animal, who do not know how to raise a dog unless they have a teacher? Mr. Hatta is doing what he can, but he can not be up all the time.

I hope that you will understand why these expenses could not be avoided.

Yours, respectfully,

HEDLEY E. REDMYER,
Superintendent Iliamna School and Reindeer Station,
Dutton, Alaska.

THE COMMISSIONER OF EDUCATION.

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